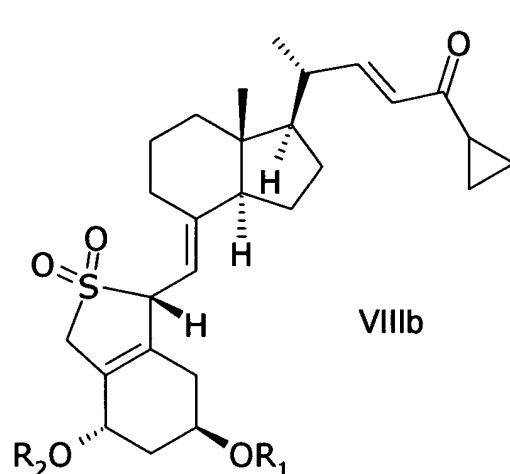
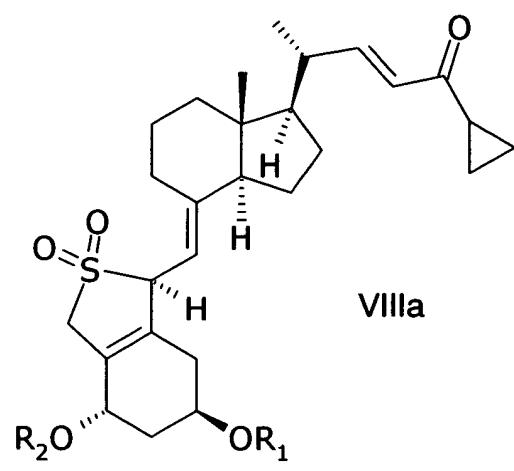
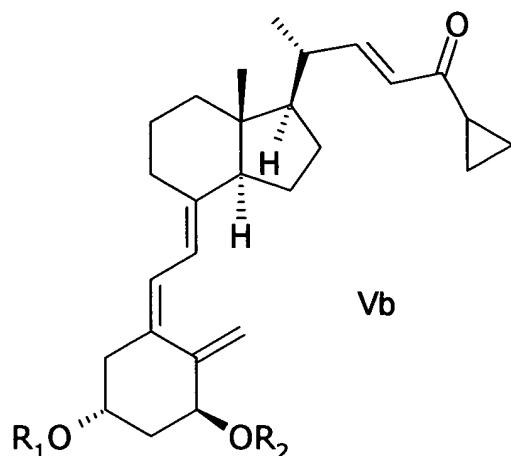
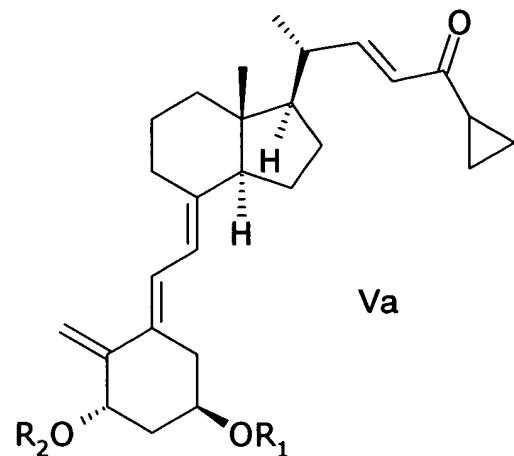
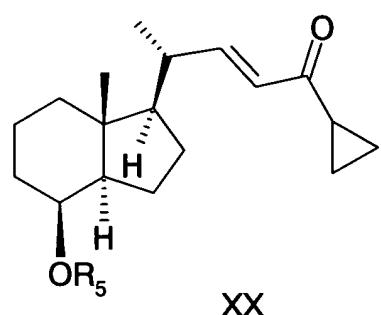
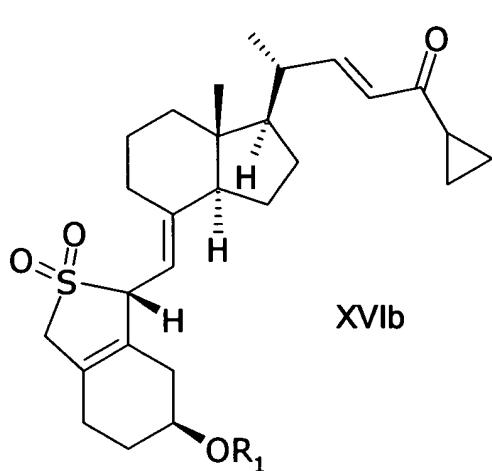
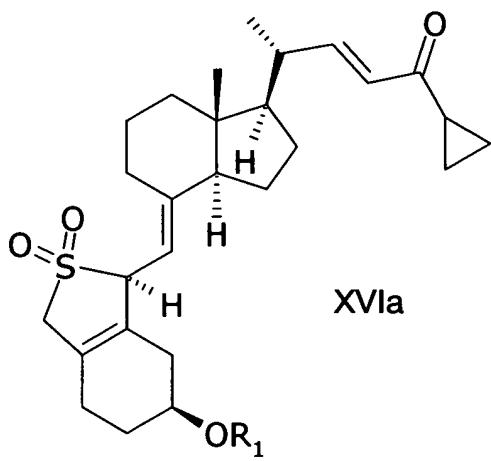
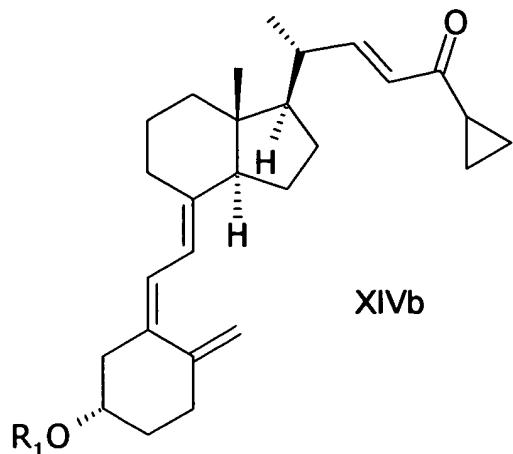
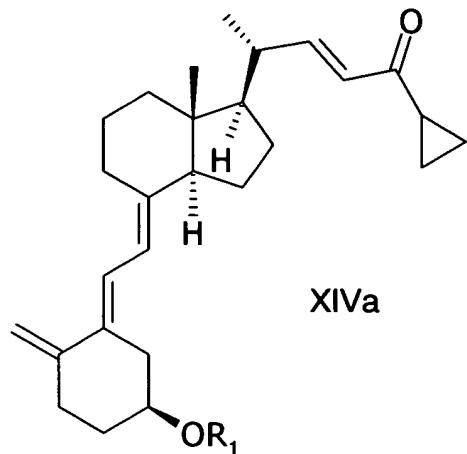


**AMENDMENTS TO THE CLAIMS**

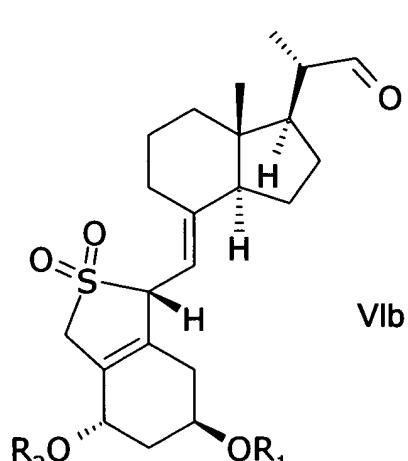
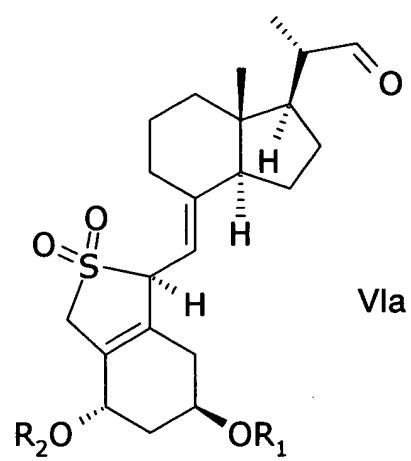
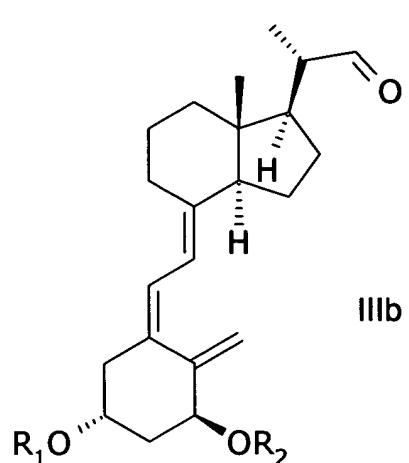
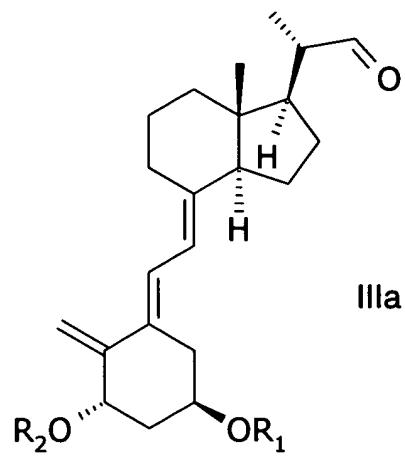
1. (Original) A method of preparing a compound of general structure Va, Vb, VIIIa, VIIIb, XIVa, XIVb, XVIa, XVIb, or XX respectively,

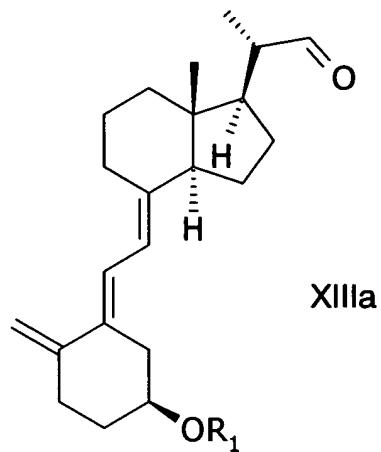




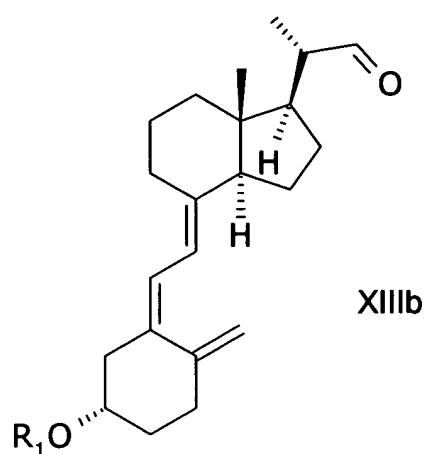
wherein R<sub>1</sub> and R<sub>2</sub> are the same or different and represent hydrogen or a hydroxy protecting group, and wherein R<sub>5</sub> represents hydrogen or a hydroxy protecting group;

the method comprising reacting a compound of general structure IIIa, IIIb, VIa, VIb, XIIIa, XIIIb, XVa, or XVb, or IXX respectively,

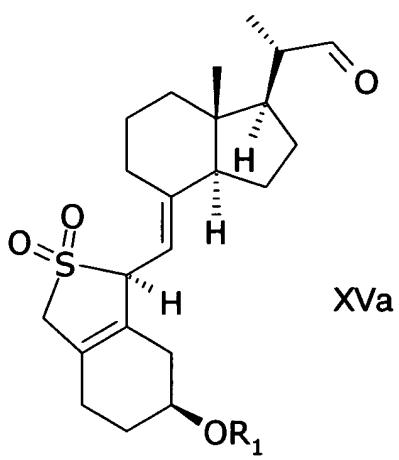




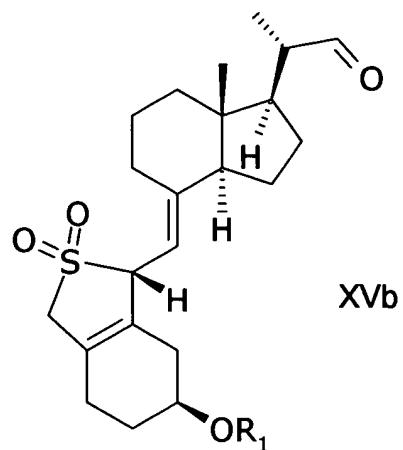
XIIIa



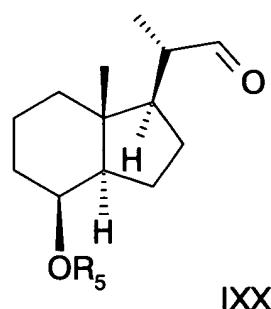
XIIIb



XVa



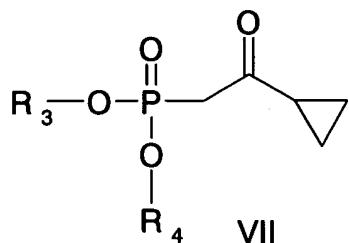
XVb



IXX

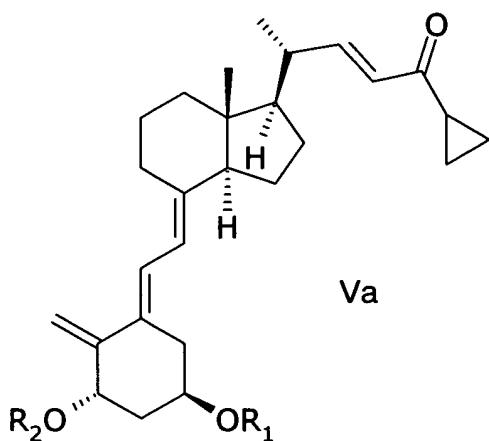
wherein R<sub>1</sub>, R<sub>2</sub>, and R<sub>5</sub> are as defined above;

with a phosphonate of general structure VII,



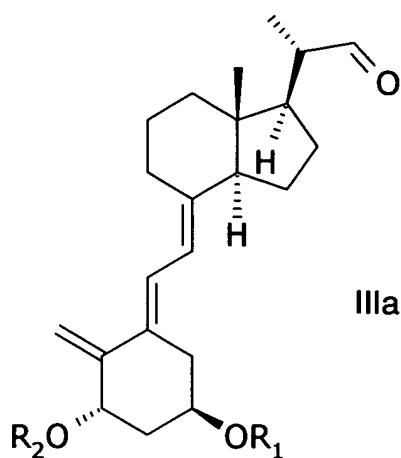
wherein R<sub>3</sub> and R<sub>4</sub> are the same or different and represent alkyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, or aryl, each being optionally substituted with one or more substituents selected from the group consisting of alkyl, aralkyl, cycloalkyl, cycloalkenyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, aryl, oxo, alkoxycarbonyl, alkylcarbonyloxy, halogen, alkoxy, carboxy, sulfo or hydroxy, in the presence of a base.

2. (Original) A method according to claim 1 of preparing a compound of general structure Va,



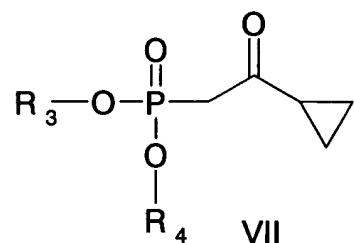
wherein R<sub>1</sub> and R<sub>2</sub> are the same or different and each represent hydrogen or a hydroxy protecting group,

the method comprising reacting a compound of general structure IIIa,



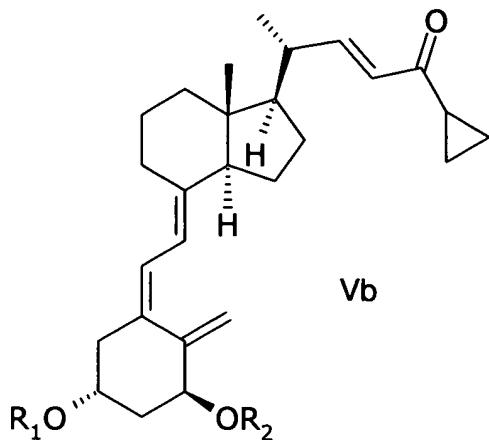
wherein R<sub>1</sub> and R<sub>2</sub> are as defined above,

with a phosphonate of general structure VII,



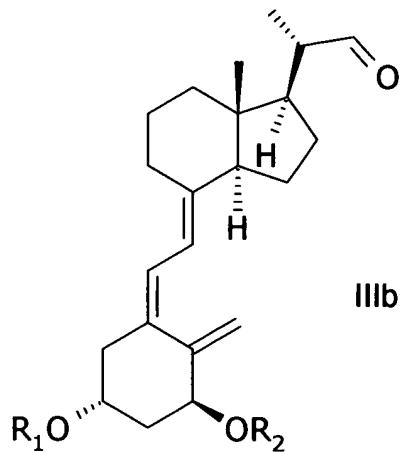
wherein R<sub>3</sub> and R<sub>4</sub> are the same or different and represent alkyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, or aryl, each being optionally substituted with one or more substituents selected from the group consisting of alkyl, aralkyl, cycloalkyl, cycloalkenyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, aryl, oxo, alkoxycarbonyl, alkylcarbonyloxy, halogen, alkoxy, carboxy, sulfo or hydroxy, in the presence of a base.

3. (Original) A method according to claim 1 of preparing a compound of general structure Vb,



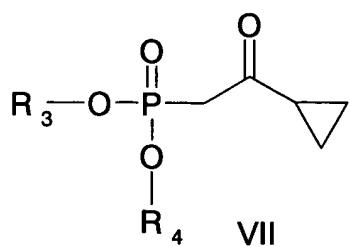
wherein R<sub>1</sub> and R<sub>2</sub> are the same or different and each represent hydrogen or a hydroxy protecting group,

the method comprising reacting a compound of general structure IIIb,



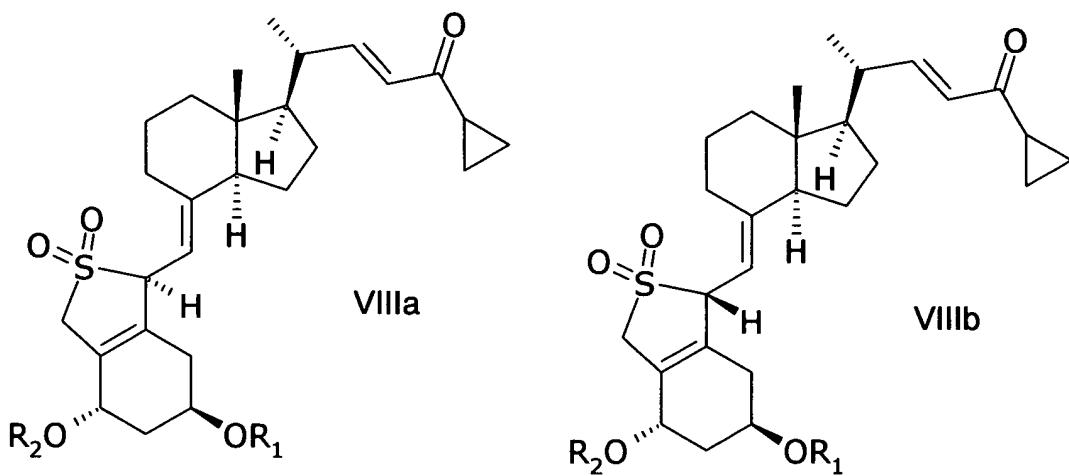
wherein R<sub>1</sub> and R<sub>2</sub> are as defined above,

with a phosphonate of general structure VII,



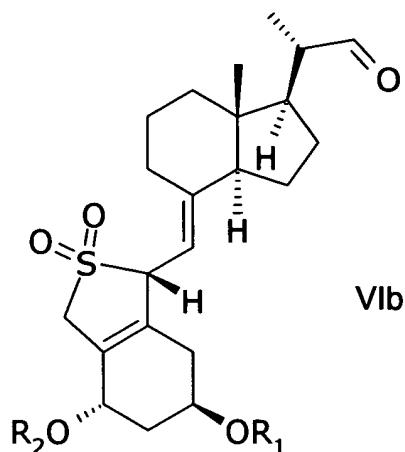
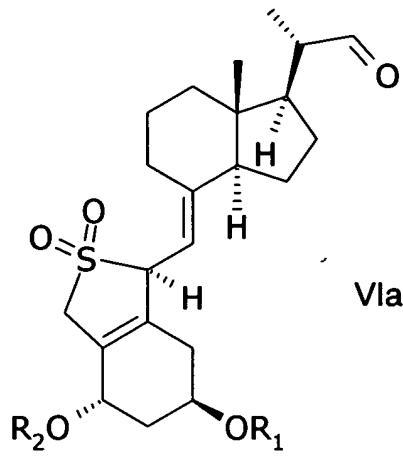
wherein R<sub>3</sub> and R<sub>4</sub> are the same or different and represent alkyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, or aryl, each being optionally substituted with one or more substituents selected from the group consisting of alkyl, aralkyl, cycloalkyl, cycloalkenyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, aryl, oxo, alkoxycarbonyl, alkylcarbonyloxy, halogen, alkoxy, carboxy, sulfo or hydroxy, in the presence of a base.

4. (Original) A method according to claim 1 of preparing a compound of general structure VIIIa or VIIIb respectively,



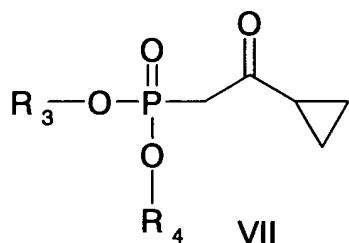
wherein R<sub>1</sub> and R<sub>2</sub> are the same or different and each represent hydrogen or a hydroxy protecting group,

the method comprising reacting a compound of general structure VIa or VIb respectively,



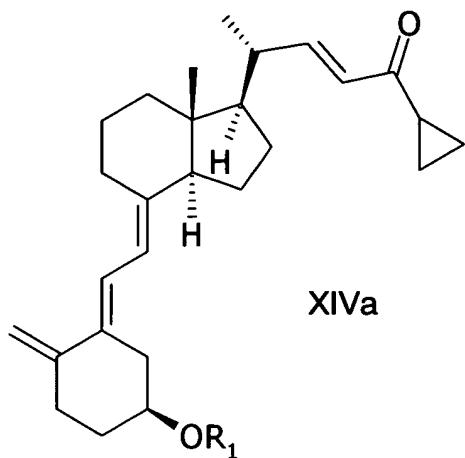
wherein R<sub>1</sub> and R<sub>2</sub> are as defined above,

with a phosphonate of general structure VII,



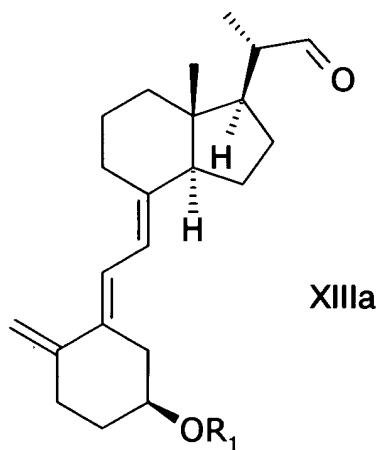
wherein R<sub>3</sub> and R<sub>4</sub> are the same or different and represent alkyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, or aryl, each being optionally substituted with one or more substituents selected from the group consisting of alkyl, aralkyl, cycloalkyl, cycloalkenyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, aryl, oxo, alkoxycarbonyl, alkylcarbonyloxy, halogen, alkoxy, carboxy, sulfo or hydroxy, in the presence of a base.

5. (Original) A method according to claim 1 of preparing a compound of general structure XIVa,



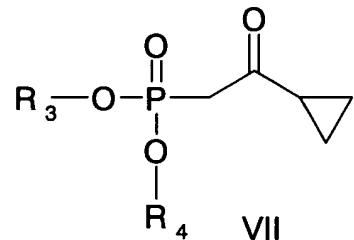
wherein R<sub>1</sub> represents hydrogen or a hydroxy protecting group,

the method comprising reacting a compound of general structure XIIIa,



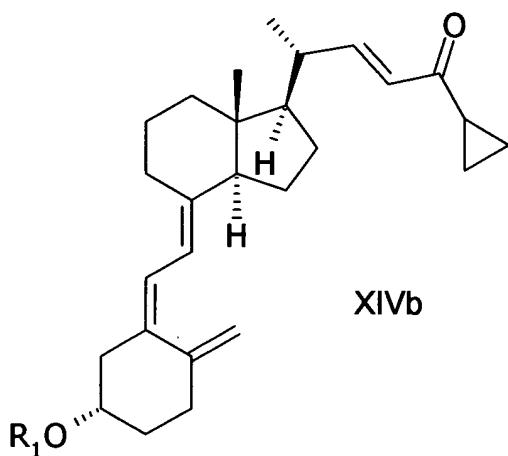
wherein  $R_1$  is as defined above,

with a phosphonate of general structure VII,



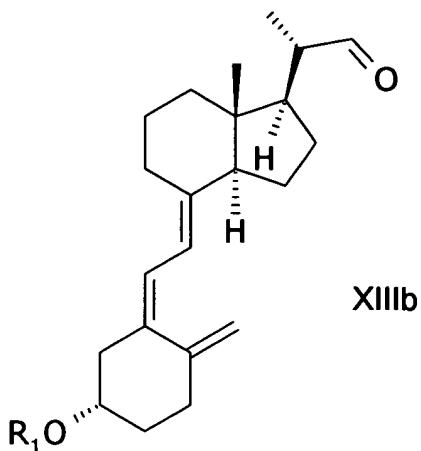
wherein R<sub>3</sub> and R<sub>4</sub> are the same or different and represent alkyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, or aryl, each being optionally substituted with one or more substituents selected from the group consisting of alkyl, aralkyl, cycloalkyl, cycloalkenyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, aryl, oxo, alkoxycarbonyl, alkylcarbonyloxy, halogen, alkoxy, carboxy, sulfo or hydroxy, in the presence of a base.

6. (Original) A method according to claim 1 of preparing a compound of general structure XIVb,



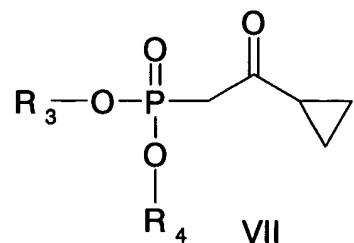
wherein R<sub>1</sub> represents hydrogen or a hydroxy protecting group,

the method comprising reacting a compound of general structure XIIIb,



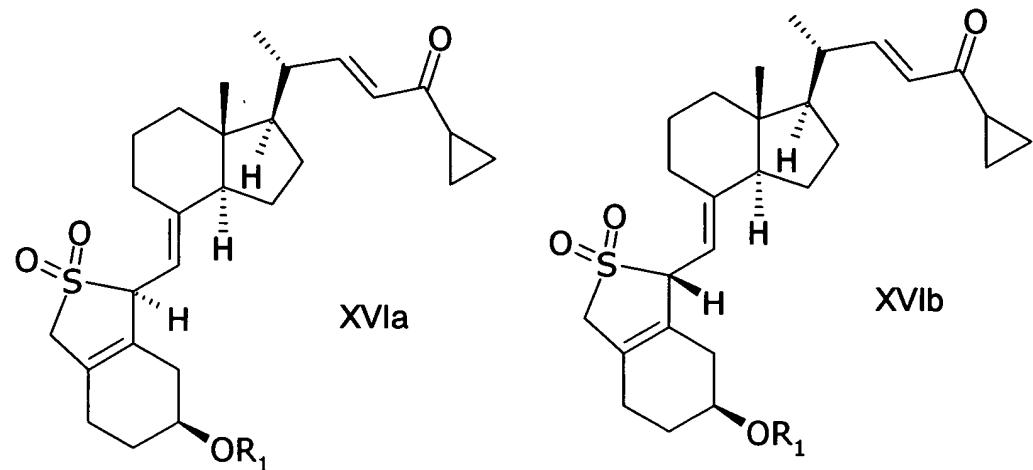
wherein  $R_1$  is as defined above,

with a phosphonate of general structure VII,



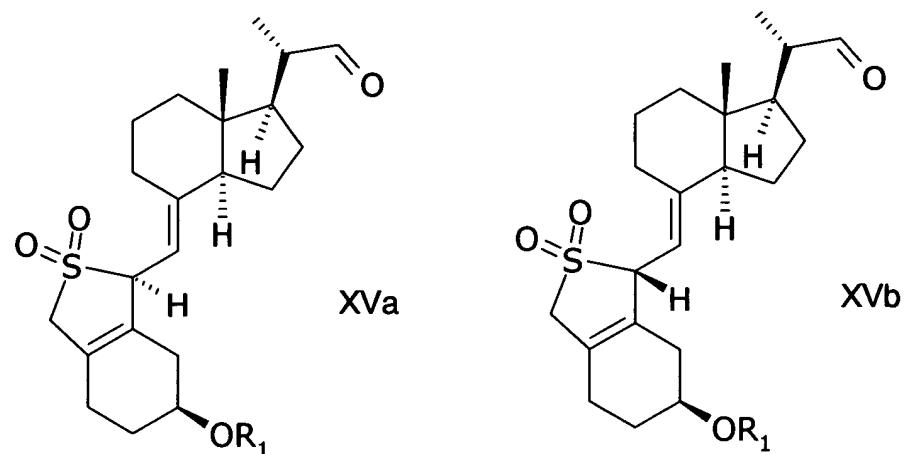
wherein  $R_3$  and  $R_4$  are the same or different and represent alkyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, or aryl, each being optionally substituted with one or more substituents selected from the group consisting of alkyl, aralkyl, cycloalkyl, cycloalkenyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, aryl, oxo, alkoxycarbonyl, alkylcarbonyloxy, halogen, alkoxy, carboxy, sulfo or hydroxy, in the presence of a base.

7. (Original) A method according to claim 1 of preparing a compound of general structure XVIa or XVIb respectively,



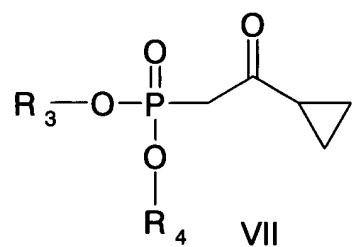
wherein R<sub>1</sub> represents hydrogen or a hydroxy protecting group,

the method comprising reacting a compound of general structure XVa or XVb respectively,



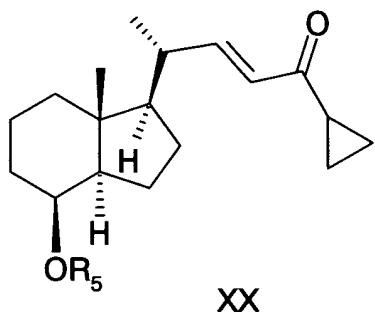
wherein R<sub>1</sub> is as defined above,

with a phosphonate of general structure VII,

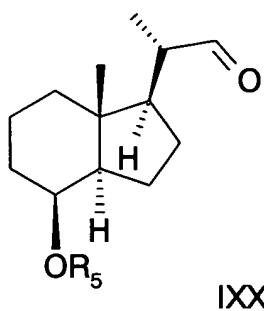


wherein R<sub>3</sub> and R<sub>4</sub> are the same or different and represent alkyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, or aryl, each being optionally substituted with one or more substituents selected from the group consisting of alkyl, aralkyl, cycloalkyl, cycloalkenyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, aryl, oxo, alkoxycarbonyl, alkylcarbonyloxy, halogen, alkoxy, carboxy, sulfo or hydroxy, in the presence of a base.

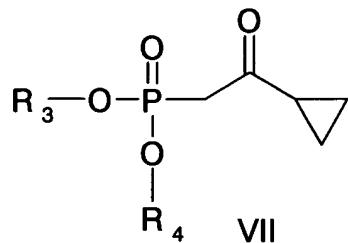
8. (Original) A method according to claim 1 of preparing a compound of general structure XX,



wherein R<sub>5</sub> represents hydrogen or a hydroxy protecting group,  
the method comprising reacting a compound of general structure IXX,



wherein R<sub>5</sub> is as defined above,  
with a phosphonate of general structure VII,

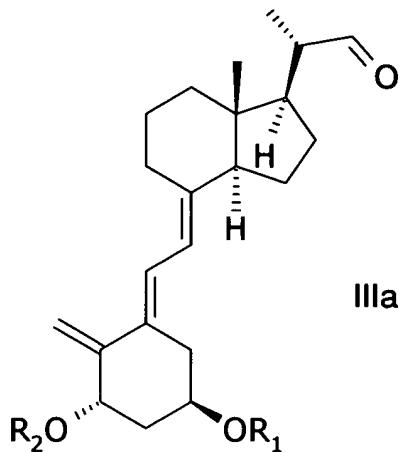


wherein R<sub>3</sub> and R<sub>4</sub> are the same or different and represent alkyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, or aryl, each being optionally substituted with one or more substituents selected from the group consisting of alkyl, aralkyl, cycloalkyl, cycloalkenyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, aryl, oxo, alkoxycarbonyl, alkylcarbonyloxy, halogen, alkoxy, carboxy, sulfo or hydroxy, in the presence of a base.

9. (Currently Amended) A method of preparing calcipotriol or calcipotriol monohydrate, the method comprising the method according to ~~any one of claims 1, 2, 3, 4, 5, 6, 7, or 8~~ claim 1 or 2.

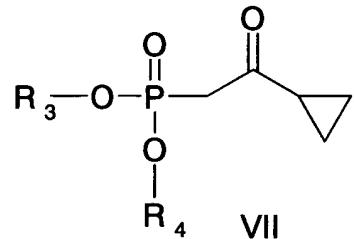
10. (Original) A method for producing calcipotriol or calcipotriol monohydrate according to claim 9, the method comprising the steps of:

(i) reacting a compound of general structure IIIa,



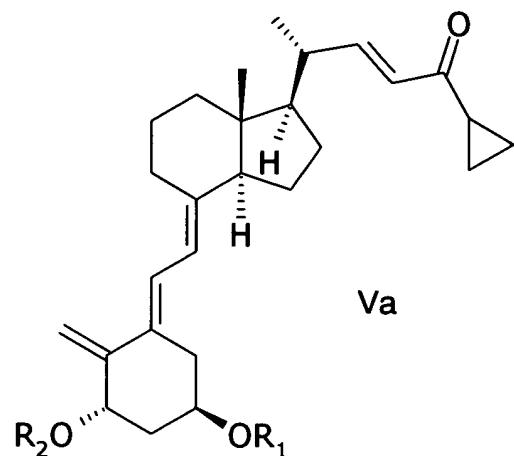
wherein  $R_1$  and  $R_2$  are the same or different and represent hydrogen or a hydroxy protecting group,

with a phosphonate of general structure VII,



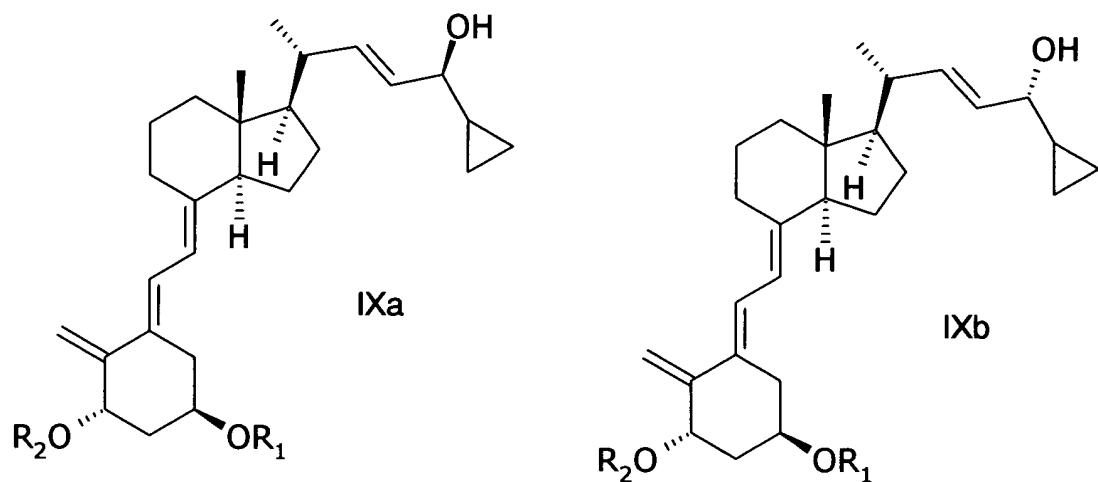
wherein  $R_3$  and  $R_4$  are the same or different and represent alkyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, or aryl, each being optionally substituted with one or more substituents selected from the group consisting of alkyl, aralkyl, cycloalkyl, cycloalkenyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, aryl, oxo, alkoxycarbonyl, alkylcarbonyloxy, halogen, alkoxy, carboxy, sulfo or hydroxy, in the presence of a base,

to give a compound of general structure Va,



wherein  $R_1$  and  $R_2$  are as defined above;

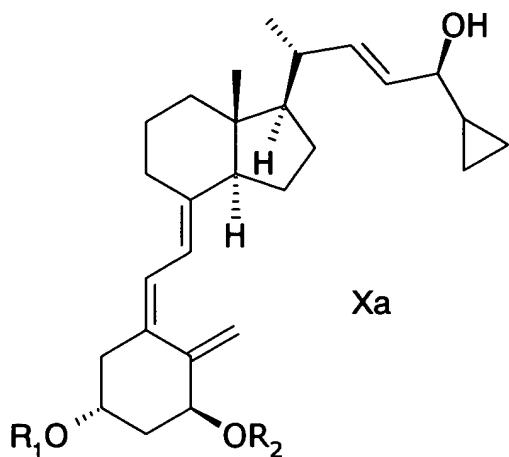
(ii) reducing the compound of general structure Va with a suitable reducing agent, to give a compound of general structure IXa or a mixture of compounds of general structure IXa and IXb,



wherein  $R_1$  and  $R_2$  are as defined above;

(iii) optionally separating the compound of general structure IXa from the mixture of compounds of general structure IXa and IXb;

(iv) photoisomerising the compound of general structure IXa to the compound of general structure Xa,

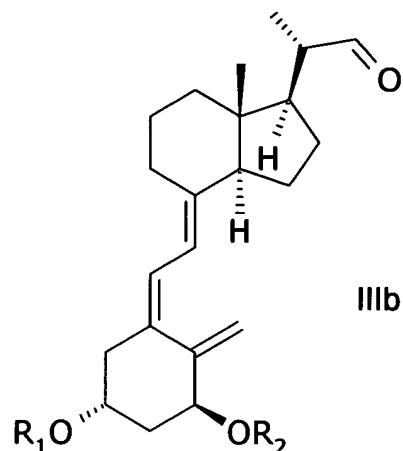


wherein R<sub>1</sub> and R<sub>2</sub> are as defined above;

(v) when R<sub>1</sub> and/or R<sub>2</sub> are not hydrogen, removing the hydroxy protecting group(s) R<sub>1</sub> and/or R<sub>2</sub> of the compound of general structure Xa to generate calcipotriol; and  
(vi) optionally crystallising the calcipotriol from a mixture of an organic solvent and water to give calcipotriol monohydrate.

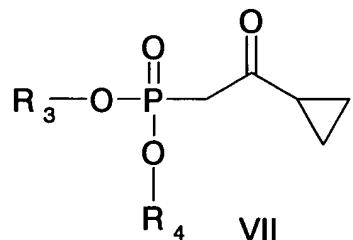
11. (Original) A method for producing calcipotriol or calcipotriol monohydrate according to claim 9, the method comprising the steps of:

(i) reacting a compound of general structure IIIb,



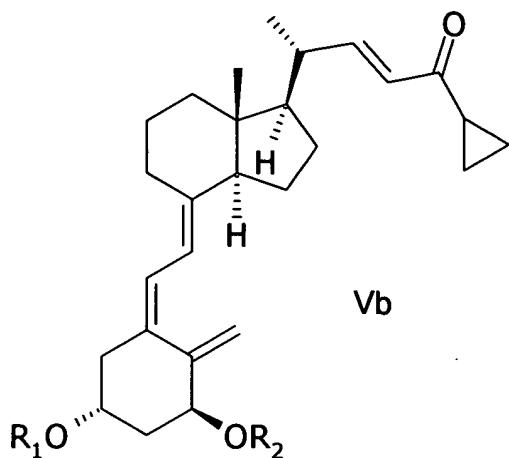
wherein  $R_1$  and  $R_2$  are the same or different and represent hydrogen or a hydroxy protecting group,

with a phosphonate of general structure VII,



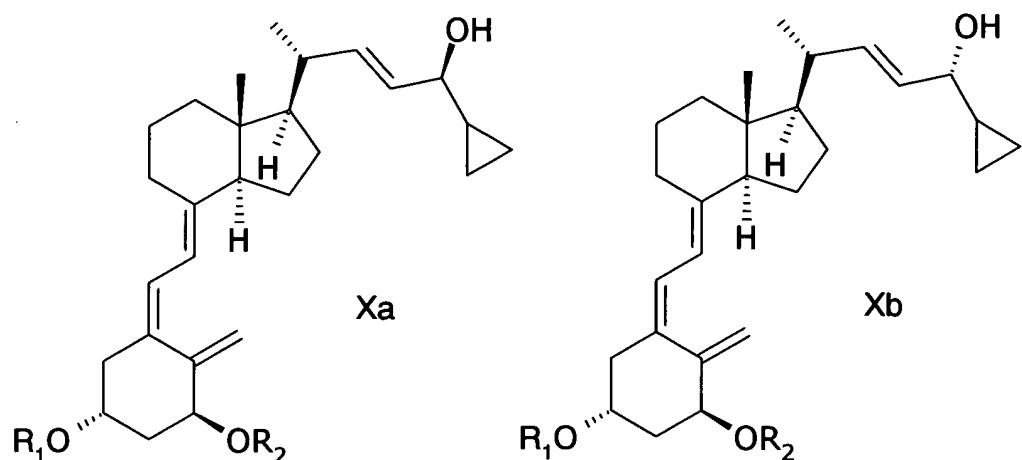
wherein  $R_3$  and  $R_4$  are the same or different and represent alkyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, or aryl, each being optionally substituted with one or more substituents selected from the group consisting of alkyl, aralkyl, cycloalkyl, cycloalkenyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, aryl, oxo, alkoxy carbonyl, alkylcarbonyloxy, halogen, alkoxy, carboxy, sulfo or hydroxy, in the presence of a base,

to give a compound of general structure Vb,



wherein R<sub>1</sub> and R<sub>2</sub> are as defined above;

(ii) reducing the compound of general structure Vb with a suitable reducing agent, to give a compound of general structure Xa or a mixture of compounds of general structure Xa and Xb,



wherein R<sub>1</sub> and R<sub>2</sub> are as defined above;

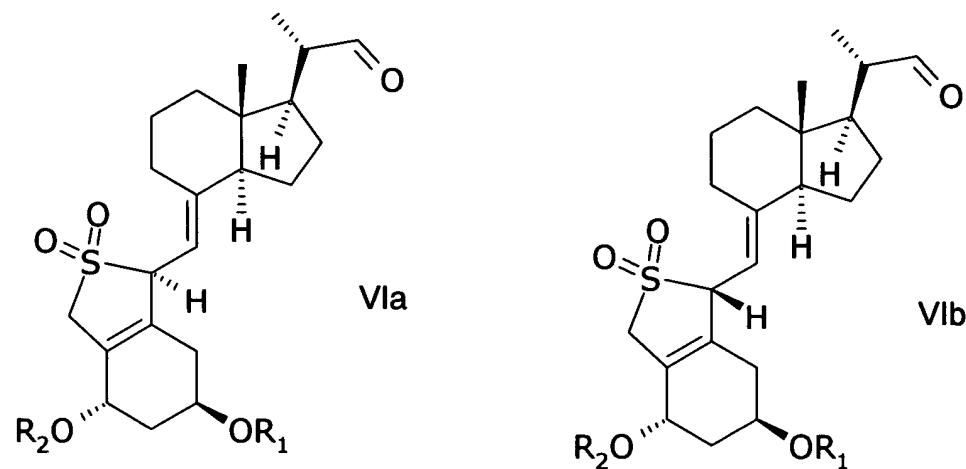
(iii) optionally separating the compound of general structure Xa from the mixture of compounds of general structure Xa and Xb;

(iv) when  $R_1$  and/or  $R_2$  are not hydrogen, removing the hydroxy protecting group(s)  $R_1$  and/or  $R_2$  of the compound of general structure Xa to generate calcipotriol; and

(v) optionally crystallising the calcipotriol from a mixture of an organic solvent and water to give calcipotriol monohydrate.

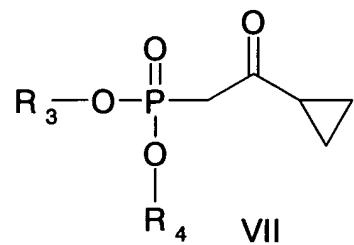
12. (Original) A method for producing calcipotriol or calcipotriol monohydrate according to claim 9, the method comprising the steps of:

(i) reacting a compound of general structure VIa and/or VIb,



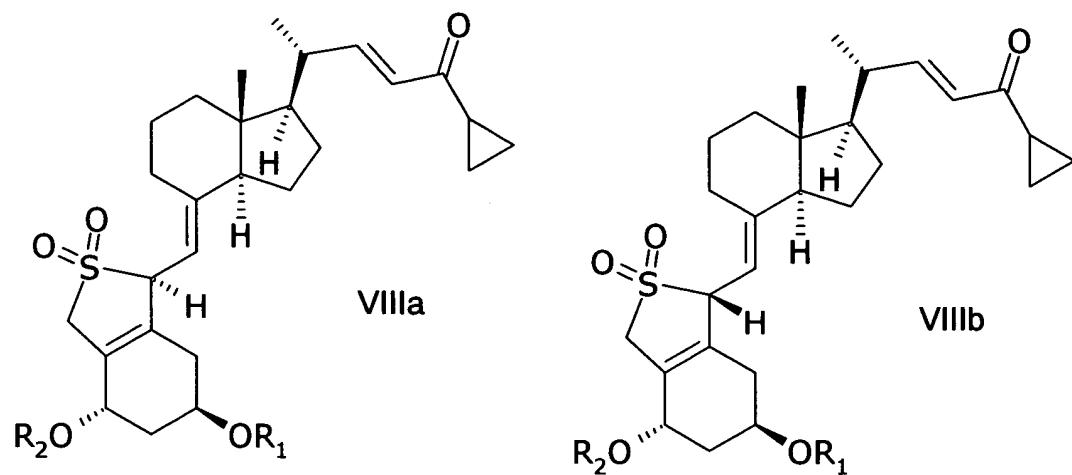
wherein  $R_1$  and  $R_2$  are the same or different and represent hydrogen or a hydroxy protecting group,

with a phosphonate of general structure VII,



wherein R<sub>3</sub> and R<sub>4</sub> are the same or different and represent alkyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, or aryl, each being optionally substituted with one or more substituents selected from the group consisting of alkyl, aralkyl, cycloalkyl, cycloalkenyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, aryl, oxo, alkoxycarbonyl, alkylcarbonyloxy, halogen, alkoxy, carboxy, sulfo or hydroxy, in the presence of a base,

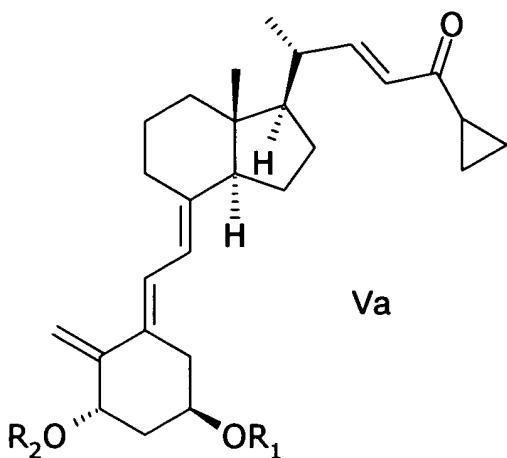
to give a compound of general structure VIIa and/or VIIb,



wherein R<sub>1</sub> and R<sub>2</sub> are as defined above;

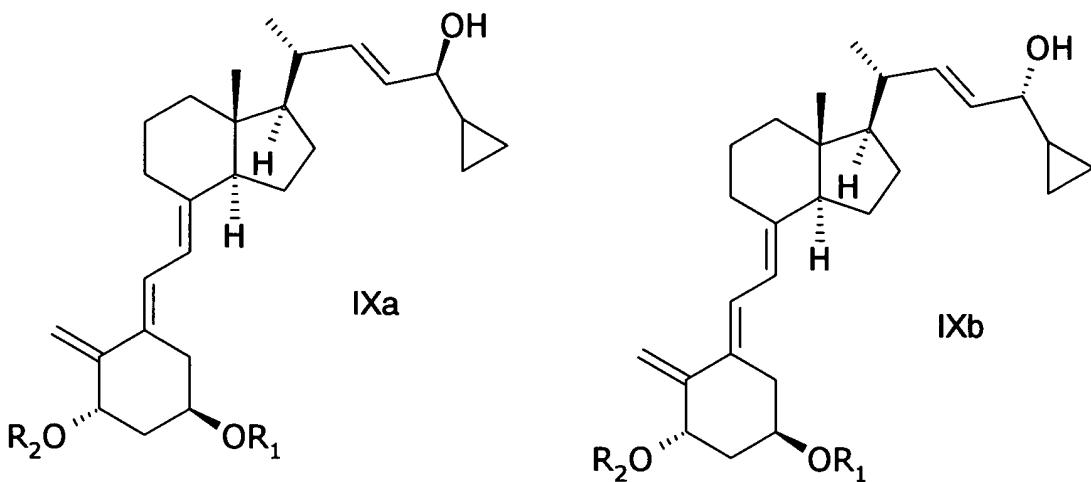
(ii) heating the compounds of general structure VIIa and/or VIIb above 60°C in the presence of a base,

to give a compound of general structure Va,



wherein  $R_1$  and  $R_2$  are as defined above;

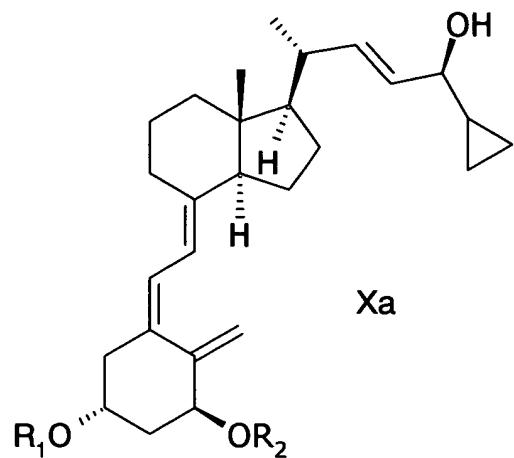
(iii) reducing the compound of general structure **Va** with a suitable reducing agent, to give a compound of general structure **IXa** or a mixture of compounds of general structure **IXa** and **IXb**,



wherein  $R_1$  and  $R_2$  are as defined above;

(iv) optionally separating the compound of general structure IXa from the mixture of compounds of general structure IXa and IXb;

(v) photoisomerising the compound of general structure IXa to the compound of general structure Xa,

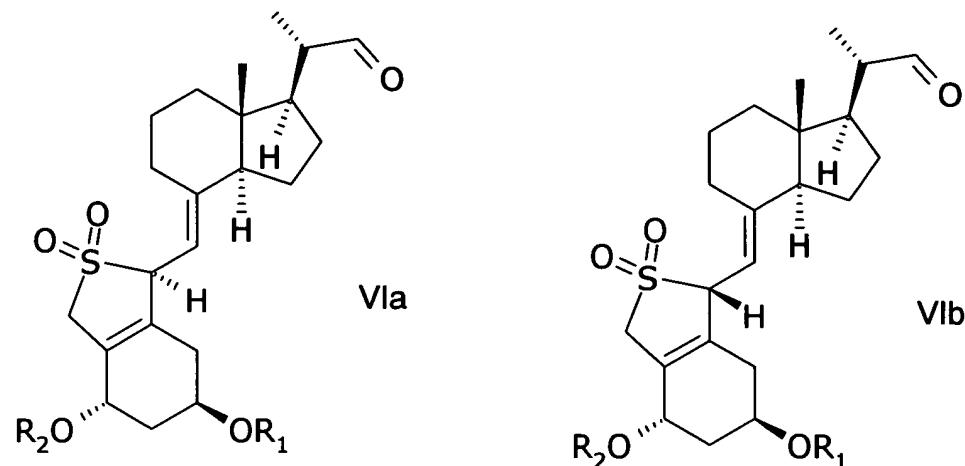


wherein R<sub>1</sub> and R<sub>2</sub> are as defined above;

(vi) when R<sub>1</sub> and/or R<sub>2</sub> are not hydrogen, removing the hydroxy protecting group(s) R<sub>1</sub> and/or R<sub>2</sub> of the compound of general structure Xa to generate calcipotriol; and  
(vii) optionally crystallising the calcipotriol from a mixture of an organic solvent and water to give calcipotriol monohydrate.

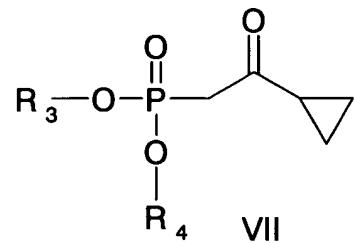
13. (Original) A method for producing calcipotriol or calcipotriol monohydrate according to claim 9, the method comprising the steps of:

(i) reacting a compound of general structure VIa and/or VIb,

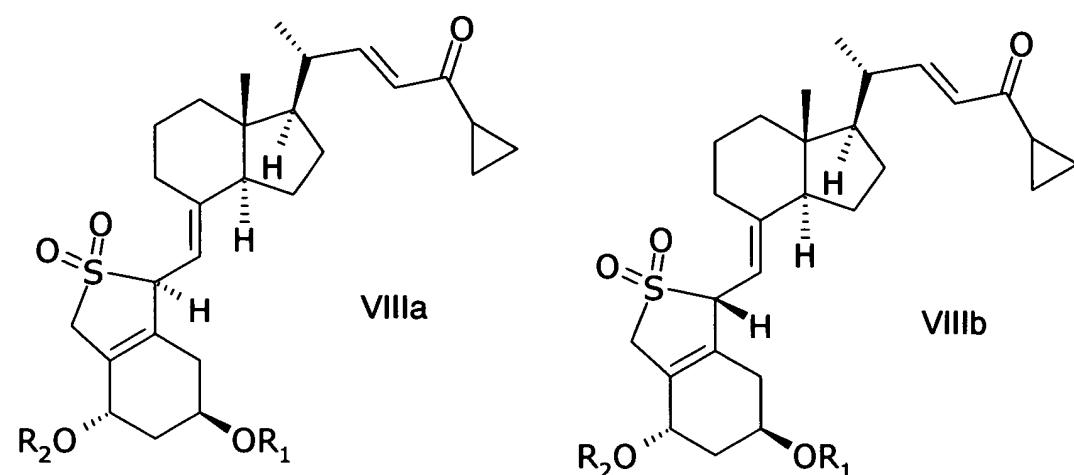


wherein R<sub>1</sub> and R<sub>2</sub> are the same or different and represent hydrogen or a hydroxy protecting group,

with a phosphonate of general structure VII,



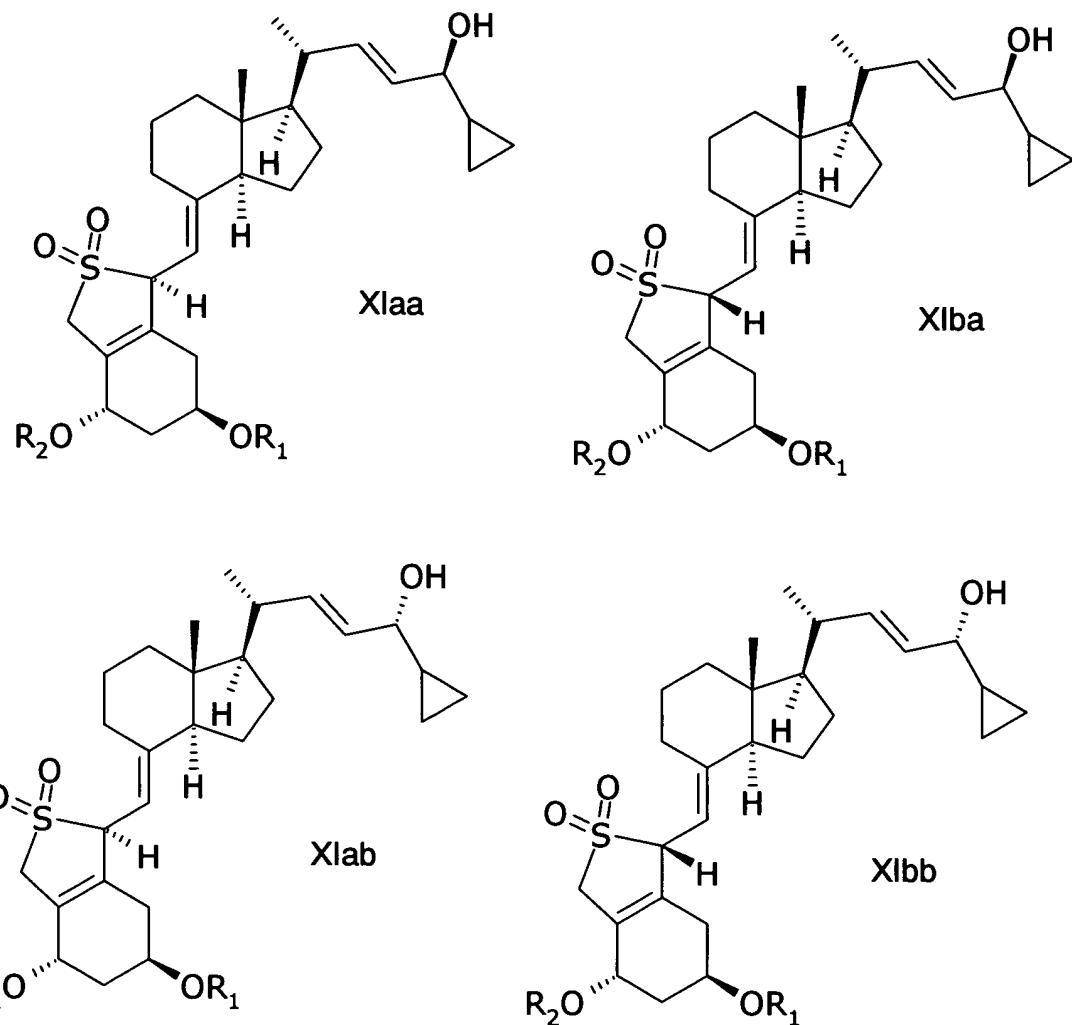
wherein R<sub>3</sub> and R<sub>4</sub> are the same or different and represent alkyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, or aryl, each being optionally substituted with one or more substituents selected from the group consisting of alkyl, aralkyl, cycloalkyl, cycloalkenyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, aryl, oxo, alkoxycarbonyl, alkylcarbonyloxy, halogen, alkoxy, carboxy, sulfo or hydroxy, in the presence of a base, to give a compound of general structure VIIIa and/or VIIIb,



wherein R<sub>1</sub> and R<sub>2</sub> are as defined above;

(ii) reducing the compounds of general structure VIIIa and/or VIIIb, with a suitable reducing agent in an inert solvent,

to give compounds of general structure XIaa and/or XIba, or a mixture of compounds of general structure XIaa and/or XIba and XIab and/or XIbb,

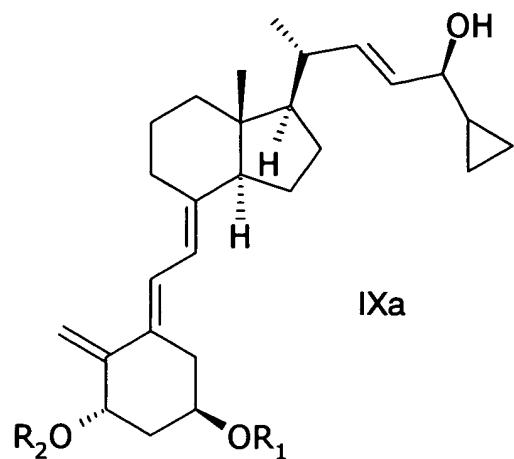


wherein  $R_1$  and  $R_2$  are as defined above;

(iii) optionally separating the compounds of general structure XIa and/or XIb from the reaction mixture;

(iv) heating the compounds of general structure XIa and/or XIb above 60°C in the presence of a base,

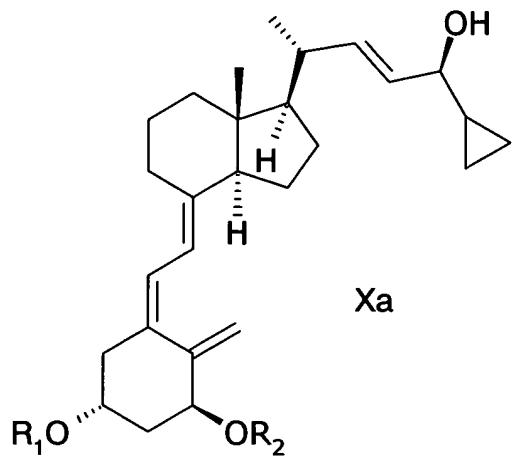
to give a compound of general structure IXa,



IXa

wherein R<sub>1</sub> and R<sub>2</sub> are as defined above;

- (v) optionally separating the compound of general IXa from the reaction mixture;
- (vi) photoisomerising the compound of general structure IXa to the compound of general structure Xa,



Xa

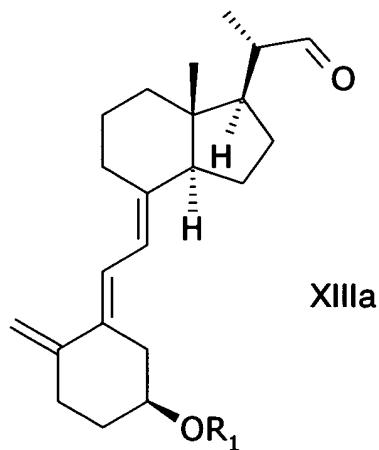
wherein R<sub>1</sub> and R<sub>2</sub> are as defined above;

- (vii) when R<sub>1</sub> and/or R<sub>2</sub> are not hydrogen, removing the hydroxy protecting group(s) R<sub>1</sub> and/or R<sub>2</sub> of the compound of general structure Xa to generate calcipotriol; and
- (viii) optionally crystallising the calcipotriol from a mixture of an organic solvent and water to give calcipotriol monohydrate;

wherein steps (vi) and (vii) may be in reversed order.

14. (Original) A method for producing calcipotriol or calcipotriol monohydrate according to claim 9, the method comprising the steps of:

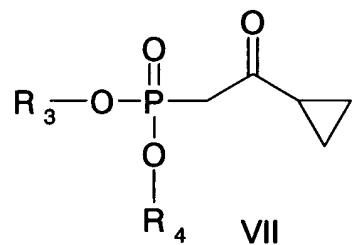
(i) reacting a compound of general structure XIIIa,



XIIIa

wherein R<sub>1</sub> represents hydrogen or a hydroxy protecting group,

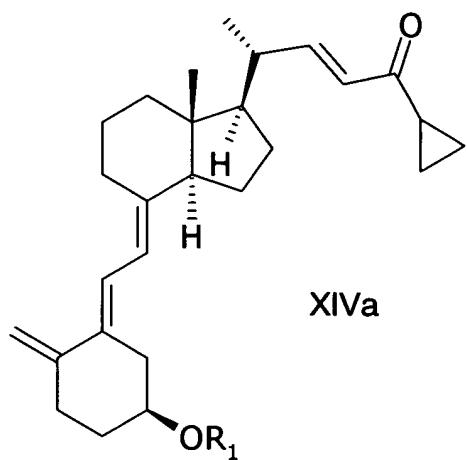
with a phosphonate of general structure VII,



VII

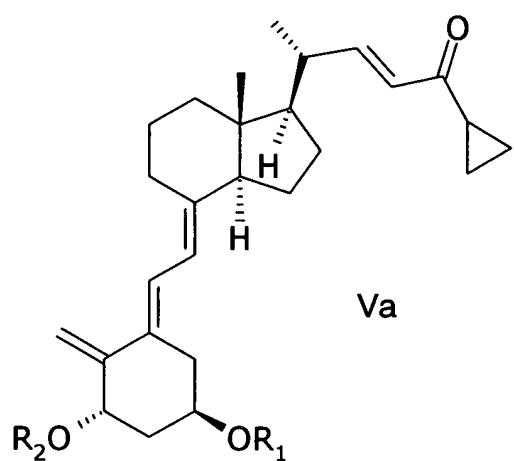
wherein R<sub>3</sub> and R<sub>4</sub> are the same or different and represent alkyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, or aryl, each being optionally substituted with one or more substituents selected from the group consisting of alkyl, aralkyl, cycloalkyl,

cycloalkenyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, aryl, oxo, alkoxycarbonyl, alkylcarbonyloxy, halogen, alkoxy, carboxy, sulfo or hydroxy, in the presence of a base, to give a compound of general structure XIVa,



wherein  $R_1$  is as defined above;

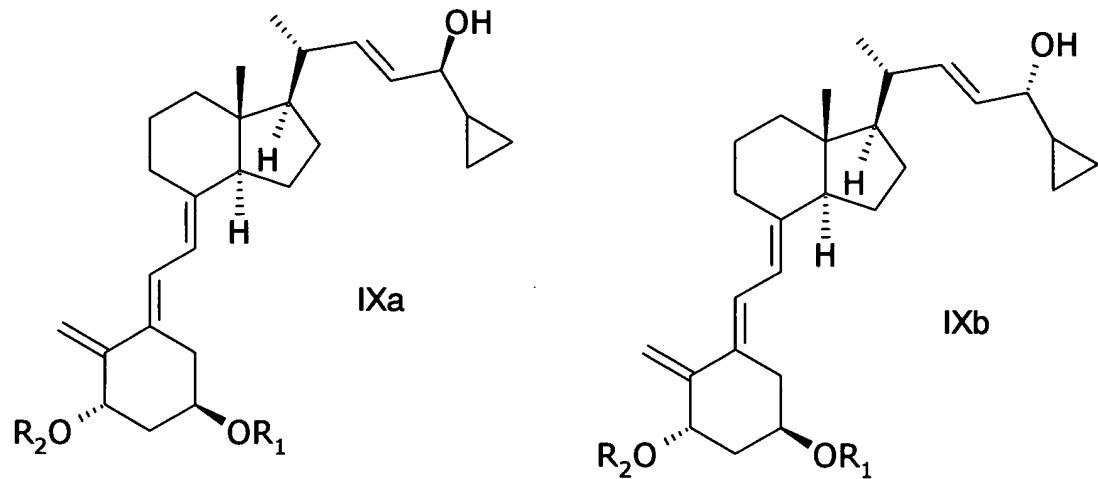
(ii) hydroxylating the compound of general structure XIVa with suitable hydroxylating agent, to give a compound of general structure Va,



wherein R<sub>1</sub> represents hydrogen or a hydroxy protecting group and R<sub>2</sub> is hydrogen;

(iii) optionally reacting the compound of general structure Va, wherein R<sub>1</sub> represents hydrogen or a hydroxy protecting group and R<sub>2</sub> is hydrogen with a suitable protecting agent, to give a compound of general structure Va, wherein R<sub>1</sub> and R<sub>2</sub> are the same or different and represent a hydroxy protecting group;

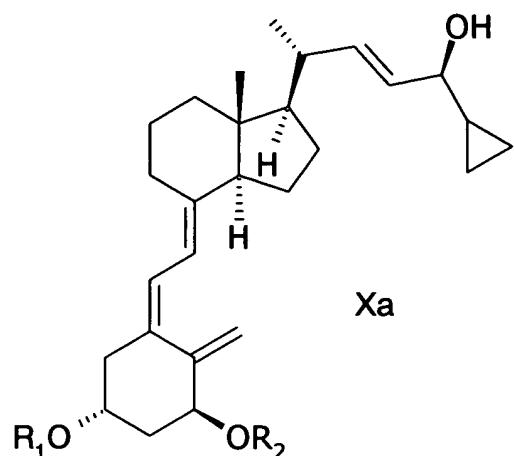
(iv) reducing the compound of general structure Va with a suitable reducing agent, to give a compound of general structure IXa or a mixture of compounds of general structure IXa and IXb,



wherein R<sub>1</sub> and R<sub>2</sub> are as defined above;

(v) optionally separating the compound of general structure IXa from the mixture of compounds of general structure IXa and IXb;

(vi) photoisomerising the compound of general structure IXa to a compound of general structure Xa,

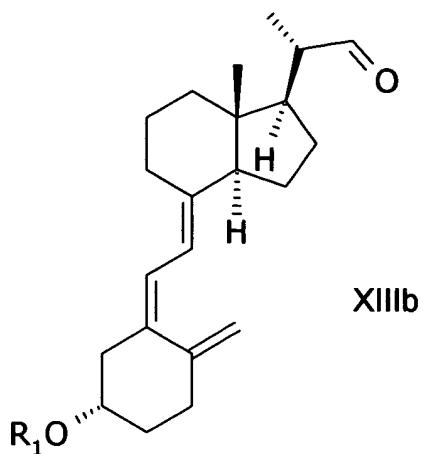


wherein R<sub>1</sub> and R<sub>2</sub> are as defined above;

- (vii) when R<sub>1</sub> and/or R<sub>2</sub> are not hydrogen, removing the hydroxy protecting group(s) R<sub>1</sub> and/or R<sub>2</sub> of the compound of general structure Xa to generate calcipotriol; and
- (viii) optionally crystallising the calcipotriol from a mixture of an organic solvent and water to give calcipotriol monohydrate.

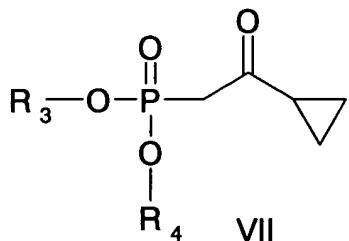
15. (Original) A method for producing calcipotriol or calcipotriol monohydrate according to claim 9, the method comprising the steps of:

- (i) reacting a compound of general structure XIIIb,



wherein  $R_1$  represents hydrogen or a hydroxy protecting group,

with a phosphonate of general structure VII,

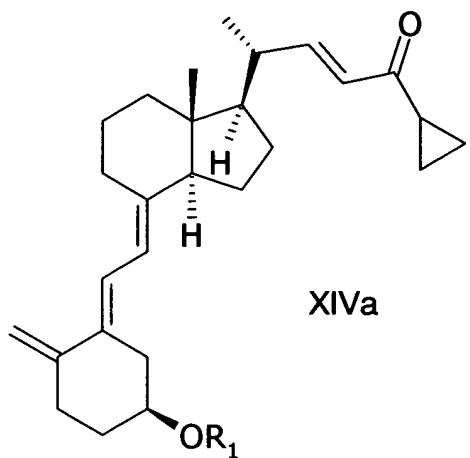


wherein  $R_3$  and  $R_4$  are the same or different and represent alkyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, or aryl, each being optionally substituted with one or more substituents selected from the group consisting of alkyl, aralkyl, cycloalkyl, cycloalkenyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, aryl, oxo, alkoxycarbonyl, alkylcarbonyloxy, halogen, alkoxy, carboxy, sulfo or hydroxy, in the presence of a base,

to give a compound of general structure XIVb,

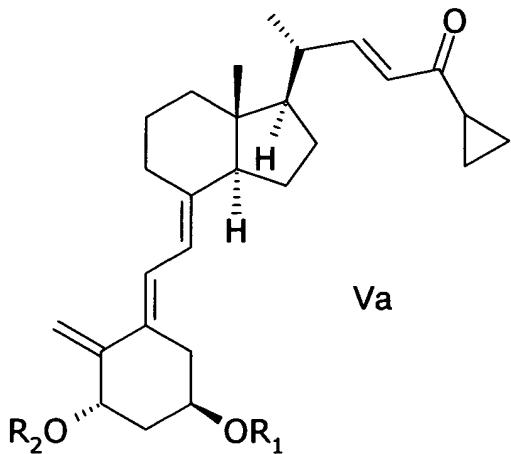
wherein  $R_1$  is as defined above;

(ii) photoisomerising the compound of general structure XIVb to a compound of general structure XIVa,



wherein R<sub>1</sub> is as defined above;

(iii) hydroxylating the compound of general structure XIVa with suitable hydroxylating agent, to give a compound of general structure Va,

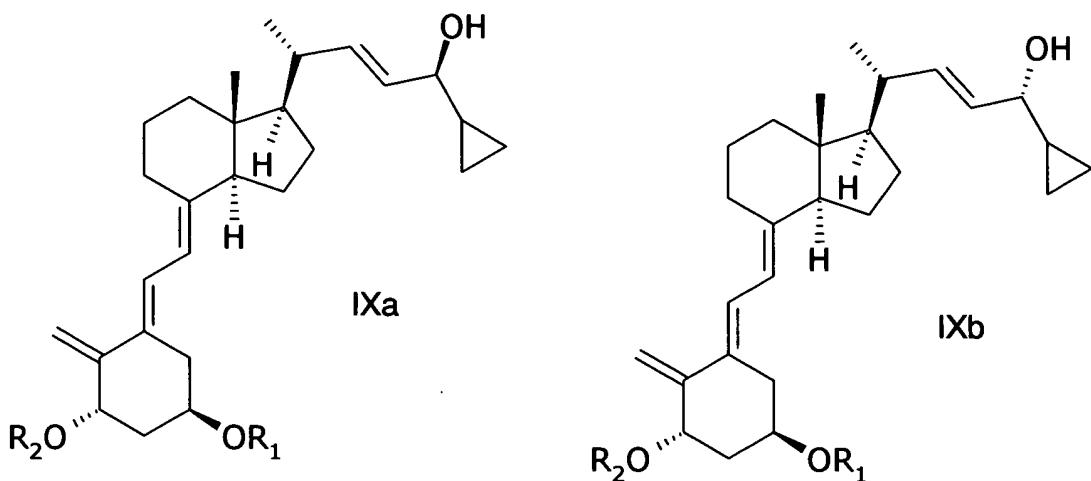


wherein R<sub>1</sub> represents hydrogen or a hydroxy protecting group and R<sub>2</sub> is hydrogen;

(iv) optionally reacting the compound of general structure Va, wherein R<sub>1</sub> represents hydrogen or a hydroxy protecting group and R<sub>2</sub> is hydrogen with a suitable protecting agent to give a

compound of general structure Va, wherein R<sub>1</sub> and R<sub>2</sub> are the same or different and represent a hydroxy protecting group;

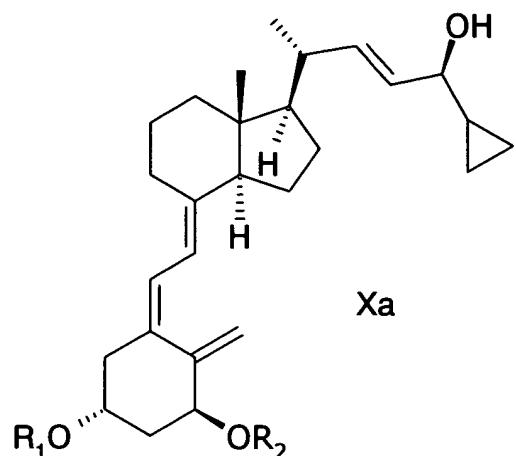
(v) reducing the compound of general structure **Va** with a suitable reducing agent, to give a compound of general structure **IXa** or a mixture of compounds of general structure **IXa** and **IXb**,



wherein  $R_1$  and  $R_2$  are as defined above;

(vi) optionally separating the compound of general structure IXa from the mixture of compounds of general structure IXa and IXb;

(vii) photoisomerising the compound of general structure **IXa** to the compound of general structure **Xa**,

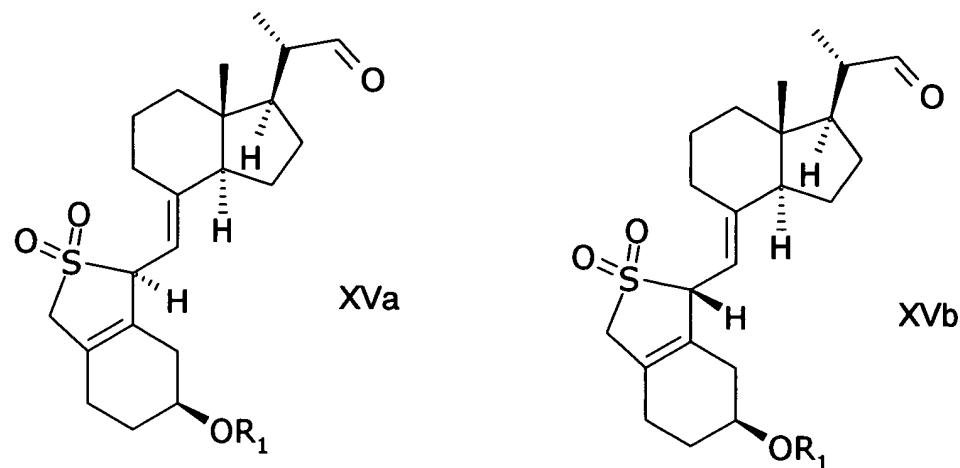


wherein R<sub>1</sub> and R<sub>2</sub> are as defined above;

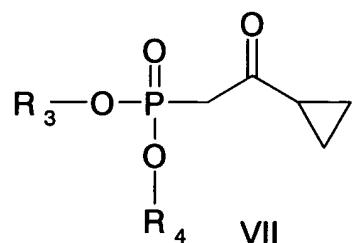
- (viii) when R<sub>1</sub> and/or R<sub>2</sub> are not hydrogen, removing the hydroxy protecting group(s) R<sub>1</sub> and/or R<sub>2</sub> of the compound of general structure **Xa** to generate calcipotriol; and
- (ix) optionally crystallising the calcipotriol from a mixture of an organic solvent and water to give calcipotriol monohydrate.

16. (Original) A method for producing calcipotriol or calcipotriol monohydrate according to claim 9, the method comprising the steps of:

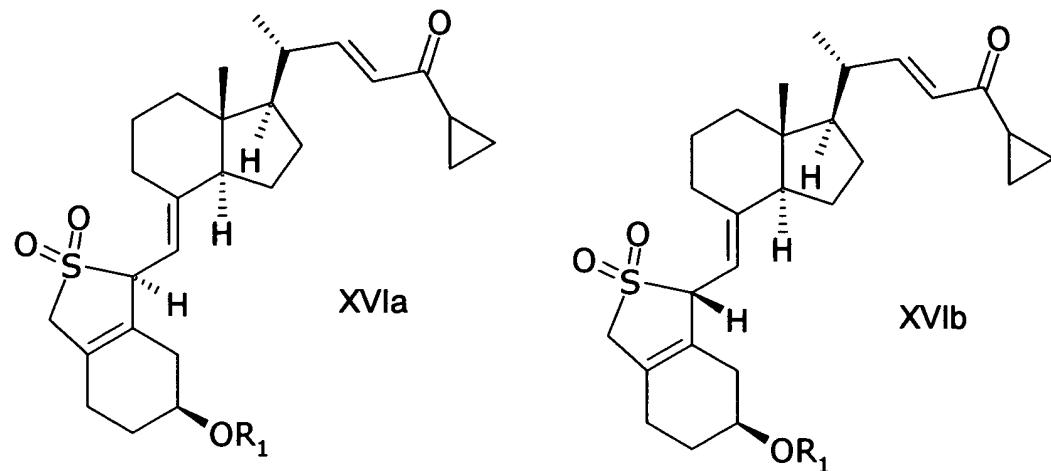
- (i) reacting a compound of general structure **XVa** and/or **XVb**,



wherein R<sub>1</sub> represents a hydrogen or a hydroxy protecting group,  
with a phosphonate of general structure VII,



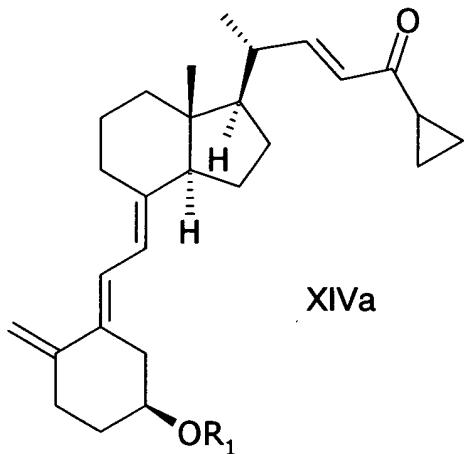
wherein R<sub>3</sub> and R<sub>4</sub> are the same or different and represent alkyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, or aryl, each being optionally substituted with one or more substituents selected from the group consisting of alkyl, aralkyl, cycloalkyl, cycloalkenyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, aryl, oxo, alkoxycarbonyl, alkylcarbonyloxy, halogen, alkoxy, carboxy, sulfo or hydroxy,  
in the presence of a base,  
to give a compound of general structure XVIa and/or XVIb,



wherein R<sub>1</sub> is as defined above;

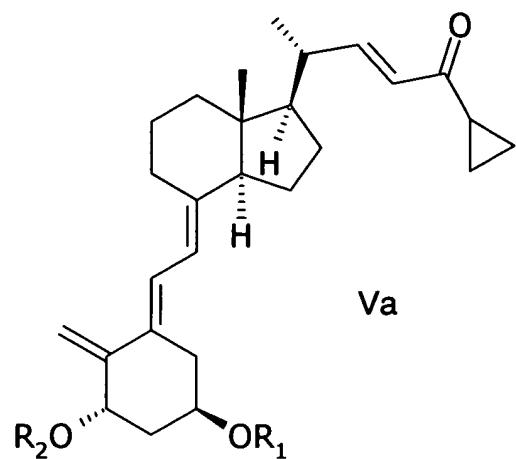
(ii) heating the compounds of general structure XVIa and/or XVIb above 60°C in the presence of a base,

to give a compound of general structure XIVa,



wherein R<sub>1</sub> is as defined above;

(iii) hydroxylating the compound of general structure XIVa with suitable hydroxylating agent, to give a compound of general structure Va,



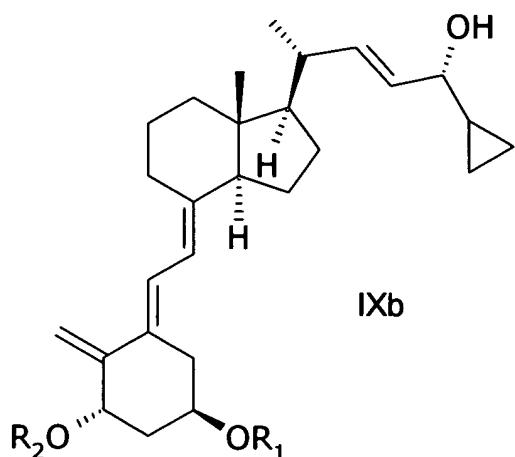
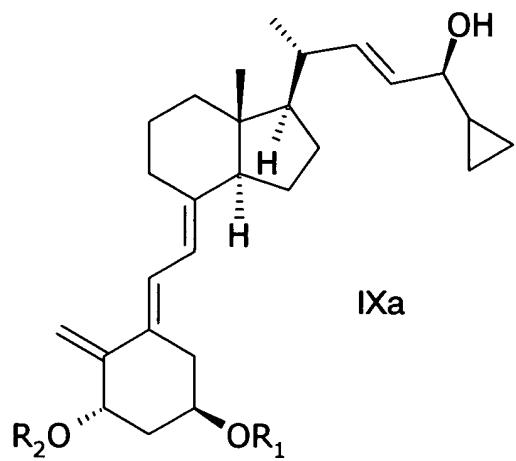
wherein R<sub>1</sub> represents hydrogen or a hydroxy protecting group and R<sub>2</sub> is hydrogen;

(iv) optionally reacting the compound of general structure Va, wherein R<sub>1</sub> represents hydrogen or a hydroxy protecting group and R<sub>2</sub> is hydrogen with a suitable protecting agent,

to give a compound of general structure Va, wherein R<sub>1</sub> and R<sub>2</sub> are the same or different and represent a hydroxy protecting group;

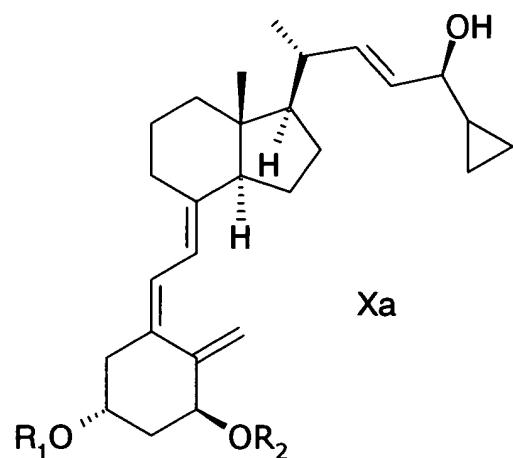
(v) reducing the compound of general structure Va with a suitable reducing agent,

to give a compound of general structure IXa or a mixture of compounds of general structure IXa and IXb,



wherein R<sub>1</sub> and R<sub>2</sub> are as defined above;

- (vi) optionally separating the compound of general structure IXa from the mixture of compounds of general structure IXa and IXb;
- (vii) photoisomerising the compound of general structure IXa to the compound of general structure Xa,

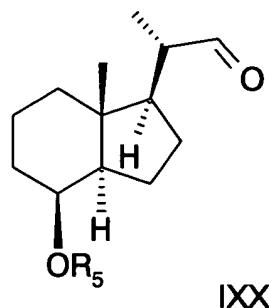


wherein R<sub>1</sub> and R<sub>2</sub> are as defined above;

- (viii) when R<sub>1</sub> and/or R<sub>2</sub> are not hydrogen, removing the hydroxy protecting group(s) R<sub>1</sub> and/or R<sub>2</sub> of the compound of general structure Xa to generate calcipotriol; and
- (ix) optionally crystallising the calcipotriol from a mixture of an organic solvent and water to give calcipotriol monohydrate.

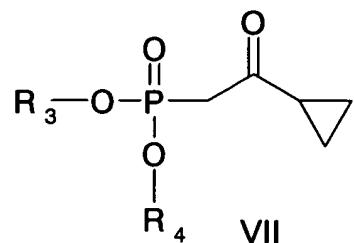
17. (Original) A method for producing calcipotriol or calcipotriol monohydrate according to claim 9, the method comprising the steps of:

- (i) reacting a compound of general structure IXX,



wherein R<sub>5</sub> represents hydrogen or a hydroxy protecting group,

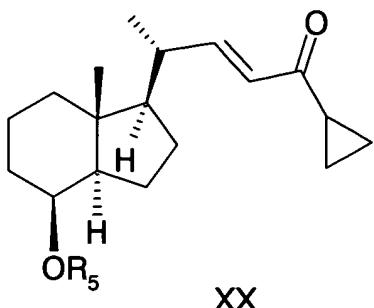
with a phosphonate of general structure VII,



wherein R<sub>3</sub> and R<sub>4</sub> are the same or different and represent alkyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, or aryl, each being optionally substituted with one or more substituents selected from the group consisting of alkyl, aralkyl, cycloalkyl, cycloalkenyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, aryl, oxo, alkoxycarbonyl, alkylcarbonyloxy, halogen, alkoxy, carboxy, sulfo or hydroxy,

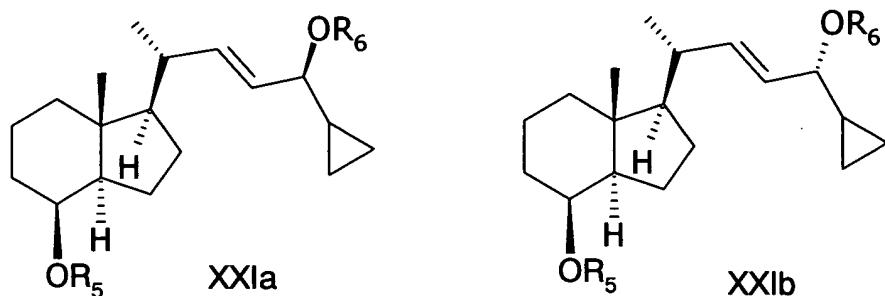
in the presence of a base,

to give a compound of general structure XX,



wherein R<sub>5</sub> is as defined above;

(ii) reducing the compound of general structure XX with a suitable reducing agent, to give a compound of general structure XXIa or a mixture of compounds of general structure XXIa and XXIb,



wherein R<sub>5</sub> is as defined above and R<sub>6</sub> is hydrogen;

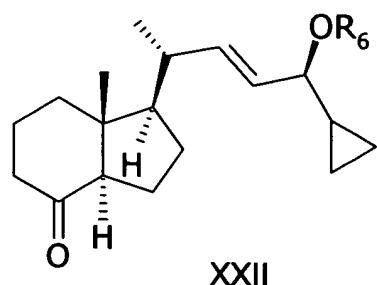
(iii) optionally separating the compound of general structure XXIa from the mixture of compounds of general structure XXIa and XXIb;

(iv) protecting the allylic hydroxy group of the compound of general structure XXIa with a suitable hydroxy protecting reagent,

to give a compound of general structure XXIa, wherein R<sub>6</sub> is a hydroxy protecting group and R<sub>5</sub> is as defined above;

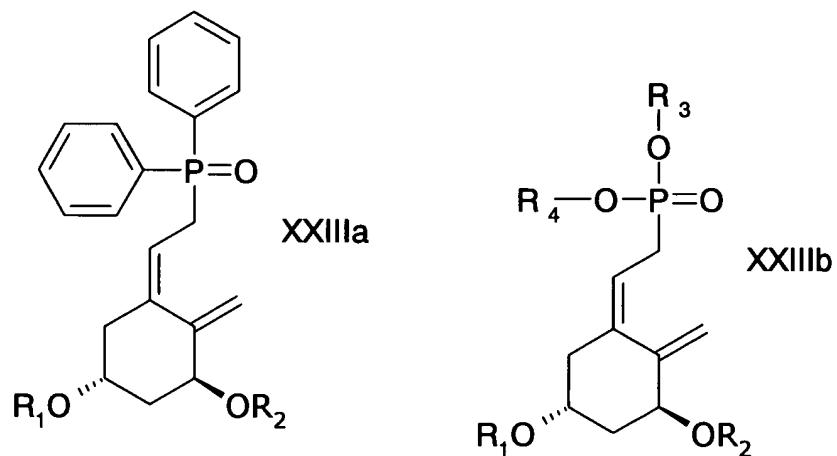
(v) when R<sub>5</sub> is not hydrogen, removing the hydroxy protecting group R<sub>5</sub> of the compound of general structure XXIa to give a compound of general structure XXIa, wherein R<sub>5</sub> is hydrogen;

(vi) oxidising the hydroxy group of the compound of general structure XXIa with a suitable oxidising agent to give a compound of general structure XXII,



wherein R<sub>6</sub> is as defined above;

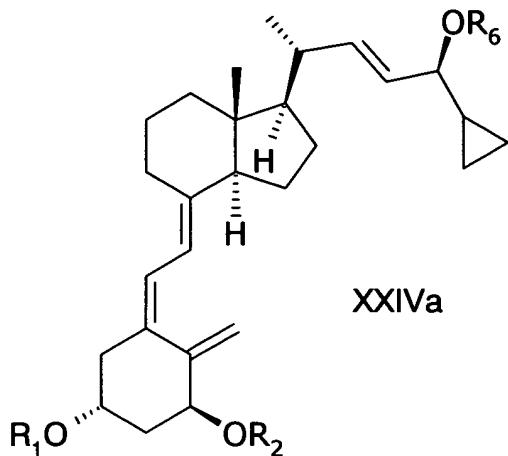
(vii) coupling of the compound of general structure XXII with a Wittig reagent XXIIIa or a Wittig Horner reagent XXIIIb,



wherein R<sub>1</sub> and R<sub>2</sub> represent a hydrogen or a hydroxy protecting group, and wherein R<sub>3</sub> and R<sub>4</sub> are as defined above;

in the presence of a base,

to give a compound of general structure XXIVa,



wherein  $\text{R}_1$  and  $\text{R}_2$  are the same or different and represent hydrogen or a hydroxy protecting group, and wherein  $\text{R}_6$  is as defined above;

(viii) when  $\text{R}_6$  is not hydrogen, removing the hydroxy protecting group  $\text{R}_6$  of the compound of general structure XXIVa;

(ix) optionally separating the compound of general structure XXIVa;

(x) when  $\text{R}_1$  and  $\text{R}_2$  are not hydrogen, removing the hydroxy protecting group(s)  $\text{R}_1$  and  $\text{R}_2$  of the compound of general structure XXIVa to generate calcipotriol;

and

(xi) optionally crystallising the calcipotriol from a mixture of an organic solvent and water to give calcipotriol monohydrate.

18. (Currently Amended) The method according to ~~any one of claims 1-17~~ claim 1, wherein  $\text{R}_3$  and  $\text{R}_4$  are ( $\text{C}_1\text{-}\text{C}_6$ )alkyl.

19. (Currently Amended) The method according to ~~any one of claims 1-17~~ claim 1 or 2, wherein R<sub>3</sub> and R<sub>4</sub> are methyl or ethyl.

20. (Currently Amended) The method according to ~~any one of claims 1-19~~ claim 1, wherein R<sub>1</sub> and R<sub>2</sub> represent hydrogen or alkylsilyl.

21. (Currently Amended) The method according to ~~any one of claims 1-19~~ claim 1 or 2, wherein R<sub>1</sub> and R<sub>2</sub> represent hydrogen or *tert*-butyldimethylsilyl.

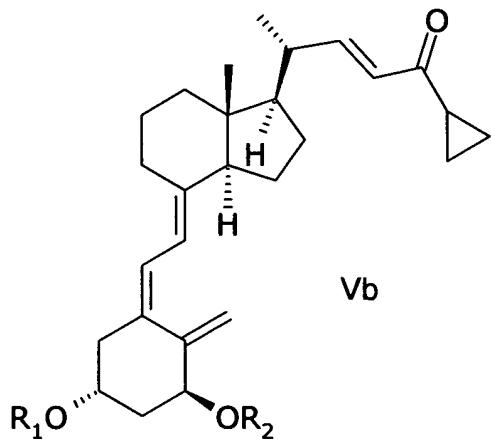
22. (Original) The method according to claim 8 or 19, wherein R<sub>5</sub> represents triethylsilyl and R<sub>3</sub> and R<sub>4</sub> are methyl or ethyl.

23. (Currently Amended) The method according to ~~any one of claims 1-22~~ claim 1 or 2, wherein the reaction with the phosphonate of general structure VII is carried out under phase-transfer conditions.

24. (Currently Amended) The method according to ~~any one of claims 1-22~~ claim 1 or 2, wherein the reaction with the phosphonate of general structure VII is carried out under phase-transfer conditions in a mixture of toluene or xylene and water with a tetraalkylammonium halide or a tetraalkylammonium hydrogensulfate as the phase transfer catalyst and with an alkalinmetal hydroxide and/or a tetraalkylammoniumhydroxide as the base.

25. (Currently Amended) The method according to ~~any one of claims 1-24~~ claim 1, wherein the reaction with the phosphonate of general structure VII is carried out at a temperature between 10<sup>0</sup>C-50<sup>0</sup>C.

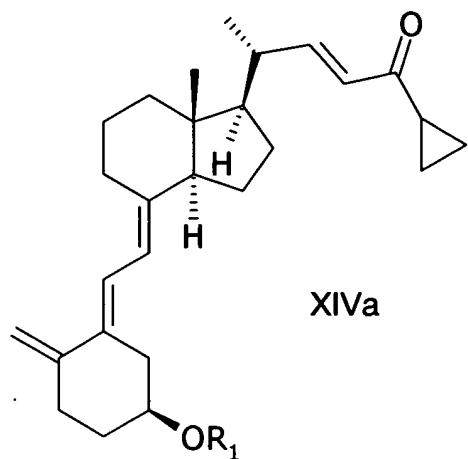
26. (Original) A compound of general structure Vb,



wherein R<sub>1</sub> and R<sub>2</sub> are the same or different and each represent a hydroxy protecting group, or R<sub>1</sub> represents hydrogen and R<sub>2</sub> represents a hydroxy protecting group, or R<sub>2</sub> represents hydrogen and R<sub>1</sub> represents a hydroxy protecting group.

27. (Original) Compound 20(R),1(S),3(R)-bis(*tert*-butyldimethylsilyloxy)-20-(3'-cyclopropyl-3'-oxoprop-1'(*E*)-enyl)-9,10-secopregna-5(*Z*),7(*E*),10(19)-triene according to claim 2.

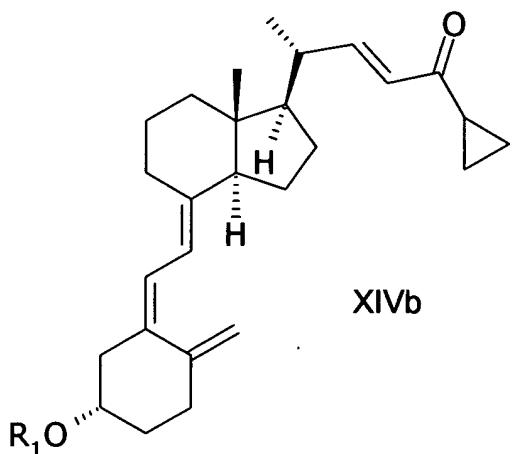
28. (Original) A compound of general structure XIVa,



XIVa

wherein R<sub>1</sub> represents hydrogen or a hydroxy protecting group, with the proviso that R<sub>1</sub> cannot be *tert*-butyldimethylsilyl.

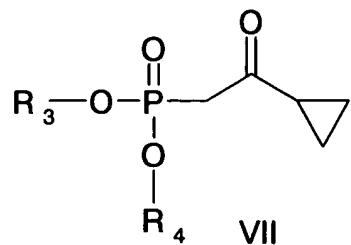
29. (Original) A compound of general structure XIVb,



XIVb

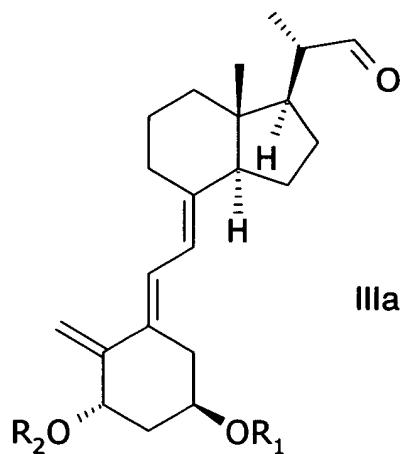
wherein R<sub>1</sub> represents hydrogen or a hydroxy protecting group.

30. (Original) A compound of general structure VII,



wherein  $R_3$  and  $R_4$  are the same or different and represent alkyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, or aryl, each being optionally substituted with one or more substituents selected from the group consisting of alkyl, aralkyl, cycloalkyl, cycloalkenyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, aryl, oxo, alkoxycarbonyl, alkylcarbonyloxy, halogen, alkoxy, carboxy, sulfo or hydroxy, provided that that the compound is not (2-cyclopropyl-2-oxoethyl)phosphonic acid diethyl ester.

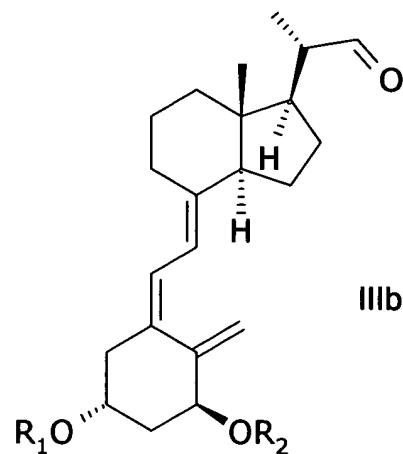
31. (Original) A compound of general structure IIIa,



wherein  $R_1$  and  $R_2$  are the same or different and represent hydrogen or a hydroxy protecting group, with the provisos that  $R_1$  and  $R_2$  cannot both be *tert*-butyldimethylsilyl, *tert*-

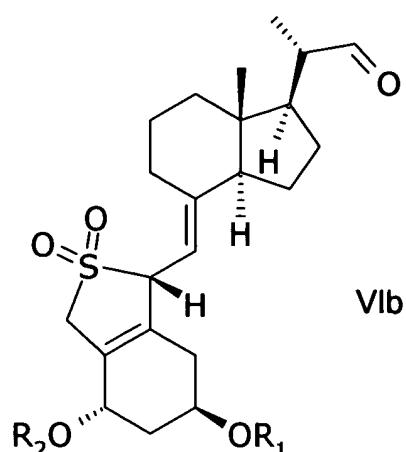
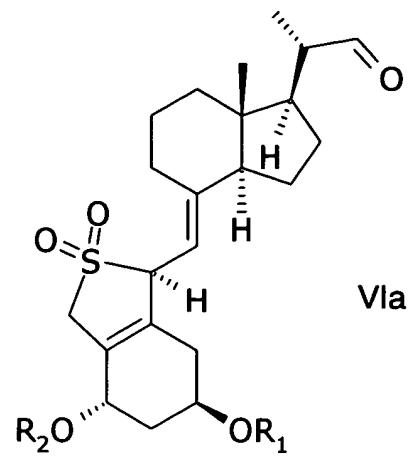
butyldiphenylsilyl, or triisopropylsilyl; with the further proviso that when R<sub>2</sub> is *tert*-butyldimethylsilyl, R<sub>1</sub> cannot be *tert*-butyldiphenylsilyl.

32. (Original) A compound of general structure IIIb,



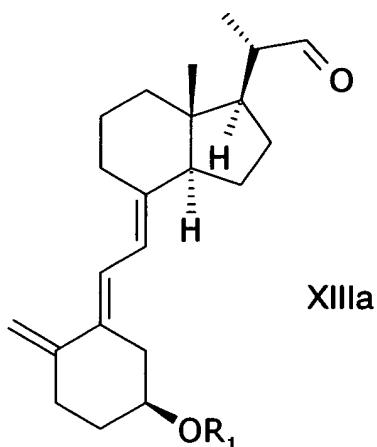
wherein R<sub>1</sub> represents a hydroxy protecting group, and R<sub>2</sub> represents hydrogen or a hydroxy protecting group; or R<sub>1</sub> represents a hydrogen or a hydroxy protecting group, and R<sub>2</sub> represents a hydroxy protecting group, except acetyl; with the proviso that R<sub>1</sub> and R<sub>2</sub> cannot both be *tert*-butyldimethylsilyl.

33. (Original) A compound of general structure VIa or VIb,



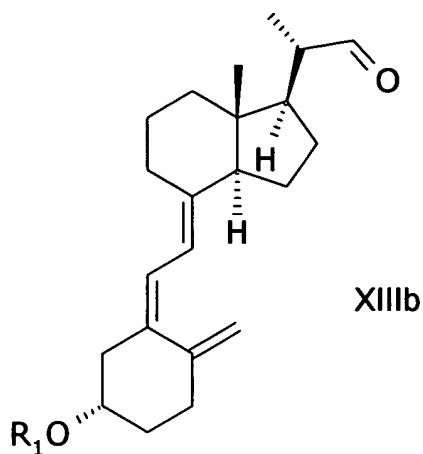
wherein R<sub>1</sub> and R<sub>2</sub> are the same or different and represent hydrogen or a hydroxy protecting group, with the proviso that R<sub>1</sub> and R<sub>2</sub> cannot both be *tert*-butyldimethylsilyl.

34. (Original) A compound of general structure XIIIa,



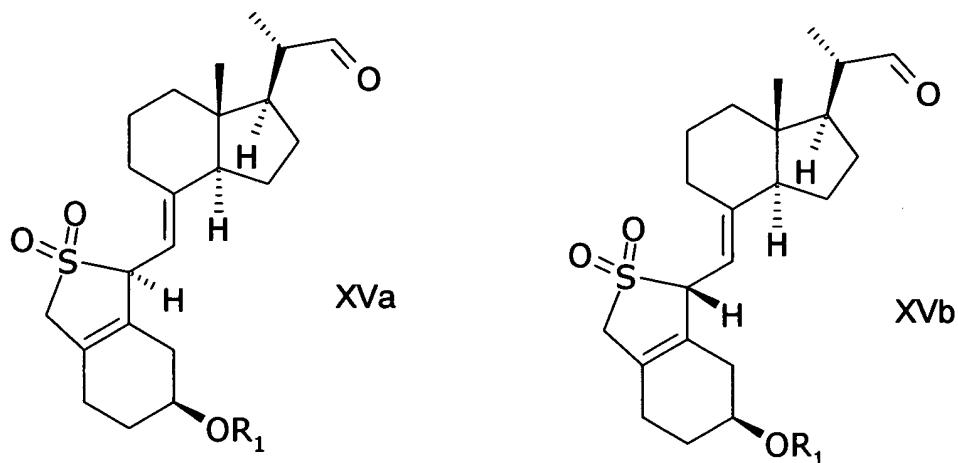
wherein R<sub>1</sub> represents hydrogen or a hydroxy protecting group, except *tert*-butyldimethylsilyl.

35. (Original) A compound of general structure XIIIb,



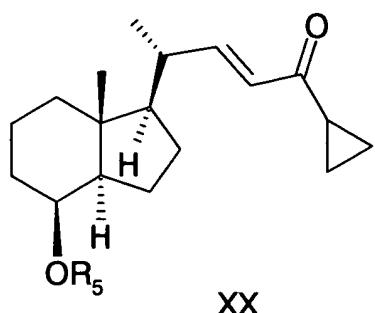
wherein R<sub>1</sub> represents a hydroxy protecting group, except *tert*-butyldimethylsilyl.

36. (Original) A compound of general structure XVa or XVb,



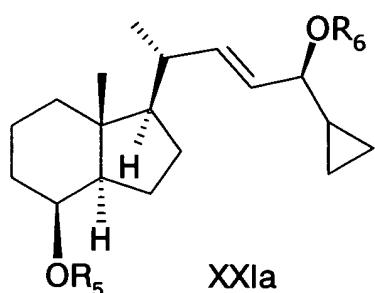
wherein R<sub>1</sub> represents a hydroxy protecting group, except *tert*-butyldimethylsilyl, triisopropylsilyl, acetyl, or triethylsilyl.

37. (Original) A compound of general structure XX,



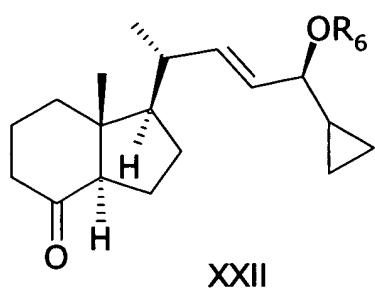
wherein R<sub>5</sub> represents hydrogen or a hydroxy protecting group.

38. (Original) A compound of general structure XXIa,



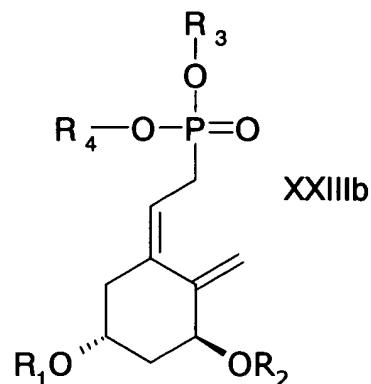
wherein R<sub>5</sub> and R<sub>6</sub> are the same or different and represent hydrogen or a hydroxy protecting group, with the provisos that when R<sub>5</sub> is hydrogen R<sub>6</sub> is not *tert*-butyldimethylsilyl, and when R<sub>5</sub> is benzoate, R<sub>6</sub> is not *tert*-butyldimethylsilyl or hydrogen.

39. (Original) A compound of general structure XXII,



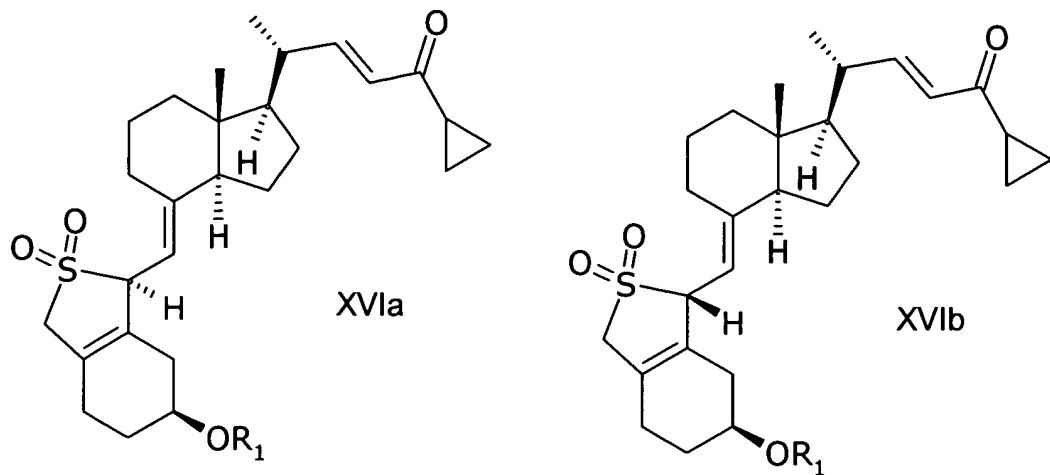
wherein R<sub>6</sub> represents hydrogen or a hydroxy protecting group, except *tert*-butyldimethylsilyl.

40. (Original) A compound of general structure XXIIIb,



wherein R<sub>1</sub> and R<sub>2</sub> are the same or different and represent hydrogen or a hydroxy protecting group, and wherein R<sub>3</sub> and R<sub>4</sub> are the same or different and represent alkyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, or aryl, each being optionally substituted with one or more substituents selected from the group consisting of alkyl, aralkyl, cycloalkyl, cycloalkenyl, haloalkyl, hydroxyalkyl, alkenyl, alkynyl, aralkyl, aralkenyl, aralkynyl, aryl, oxo, alkoxycarbonyl, alkylcarbonyloxy, halogen, alkoxy, carboxy, sulfo or hydroxy.

41. (Original) A compound of general structure XVIa or XVIb,



wherein R<sub>1</sub> represents hydrogen or a hydroxy protecting group.

42. (Currently Amended) Use of a compound according to ~~any one of claims 26-29 or 31-41~~  
claim 37 as an intermediate in the manufacture of calcipotriol or calcipotriol monohydrate.

43. (Original) Use of (2-cyclopropyl-2-oxoethyl)phosphonic acid diethyl ester in the  
manufacture of calcipotriol or calcipotriol monohydrate.

44. (Original) Use of a compound according to claim 30 in the manufacture of calcipotriol or  
calcipotriol monohydrate.